371.27
On8

Province of Ontario.

EXAMINATION PAPERS

FOR

FIRST, SECOND AND THIRD-CLASS PROVINCIAL CERTIFICATES.

JULY, 1880.

371.27
On8

EDUCATION DEPARTMENT
LIBRARY
ONTARIO.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 1.)

ENGLISH LITERATURE.

TIME—TWO HOURS AND A QUARTER.

Examiner—J. M. BUCHAN, M.A.

*** *The number placed in the margin opposite each question indicates the value to be given for an answer which is right as far as its matter is concerned. The examiner will add to the marks which he assigns for the matter of each answer, half as many for its literary form, provided that be correct.*

Values.

14 1 What are the distinguishing features of the school of Pope? What characteristics have Gray and Goldsmith in common with it, and in what does each differ from it?

2. "Hence every state, to one loved blessing prone,
Conforms and models life to that alone,
Each to the favourite happiness attends,
And spurns the plan that aims at other ends;
Till carried to excess in each domain,
This favourite good begets peculiar pain."
—*The Traveller, ll.* 93-98.

14 (i.) State, quoting the words of Goldsmith, if you can, the 'favourite good' and the 'peculiar pain' of each of the nations to whose cases he refers in support of his argument.

8 (ii.) Shew to what extent the subsequent history of each of these nations bears out his views.

1 (iii). Explain the meaning of 'domain'.

3. "But all the gentler morals, such as play
Through life's more cultured walks, and charm the way."
—*The Traveller, ll.* 235 *and* 236.

2 Explain fully what is meant by 'the gentler morals'.

[OVER.

Values.

14 4. What were Goldsmith's views as to the dangers to which freedom and good government were exposed in England when the Traveller was written? Explain these views by referring to the history of the time.

5. "For just experience tells, in every soil,
That those who think must govern those that toil;
And all that freedom's highest aims can reach
Is but to lay proportioned loads on each.
Hence, should one order disproportioned grow,
Its double weight must ruin all below."
—*The Traveller, ll.* 371-376.

3 (i.) Write out the lines following this extract that indicate the 'order' which, in Goldsmith's opinion, was growing too powerful.

2 (ii.) *Those who think must govern those that toil.* On this Mr. Sankey remarks: "So far from 'just experience' teaching this, no nation has ever been governed by its thinkers". Mr. Stevens says: "Those who toil at manual labour have, as a rule, neither the time nor the learning requisite for the study of political or social economy".

Criticize these comments, and state clearly what you consider to be Goldsmith's meaning.

4 6. Write out in full the stanzas of Gray's Elegy in which the following words occur:—

'Cromwell'.
'The genial current of the soul'.
'E'en in our ashes live their wonted fires'.
'The long-drawn aisle and fretted vault'.

7. "For who to dumb Forgetfulness a prey,
This pleasing anxious being e'er resigned,
Left the warm precincts of the cheerful day,
Nor cast one longing, lingering look behind?"

2 (i.) In what different ways may you construe 'prey'? Explain the meaning given by each construction.

3 (ii.) Explain fully the meaning of 'pleasing anxious being', 'precincts', and 'day'.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 2.)

ENGLISH GRAMMAR.

TIME—THREE HOURS.

Examiner—J. M. BUCHAN, M.A.

*** *The value set in the margin, opposite each question, under the heading* M., *is for the matter of the answer; the additional value, under* F., *is for its literary form.*

Values. M.	F.	
		1. —"In vain, Opinions, those or these, Unaltered to retain The obstinate mind decrees; Experience, like a sea, soaks, all-effacing, in. —Who lists May what is false hold dear, And for himself make mists Through which to see less clear; The world is what it is, for all our dust and din." —*Matthew Arnold—Empedocles on Ætna.*
7	1	(i.) Parse the words in the second and fifth lines.
6	1	(ii.) Analyze fully the second stanza.
5	5	(iii.) State the meaning in other words.
14	7	2. Correct anything which is wrong in the following sentences, giving your reason in each case :— "She wrote, among other poems, a spirited defence of her sex, in answer to Pope's Character of Women, which Duncomb praises in his Feminead." "It is surprising how a great part of life is made up of trifles." "Religion is surely to be taught, but what of it is to be taught, and how?"

[OVER.

Values.

M. F.

"The way and manner of doing it is certainly, as it seems to me, very evident and plain and easy to be understood and comprehended."

"The English hate frogs; but the French love frogs, and hate the English, and cut off their hind legs, and consider them a great delicacy."

"Hear what the senior professor of the Dublin Normal says of it."

"This being comparatively slow and opposite of flashy, has not obtained the reward given to the charlatan."

10 5 3. Point out the ambiguity in each of the following sentences:—

"They have no more control over him than others."

"Rich or poor, you have always been to me a true friend."

"His presence was against him."

"A man who has lost his eye-sight has in one sense less consciousness than he had before."

"The connexion between words and ideas is arbitrary and conventional, owing to the agreement of men among themselves."

2 4. Punctuate the following sentence in two ways:—

Richard Green Parker says James Russell Lowell is a great genius.

3 5. Accentuate *vehemently, vagary, laboratory.*

12 1 6. Parse the italicized words in the following sentences:

They were all rescued *to* a man.

I *had rather be* a *doorkeeper* in the house of the Lord *than dwell* in the tents of wickedness.

These documents prove my title *good.*

He falls, like Lucifer, never *to hope* again.

Music hath charms *to sooth* the savage breast.

Once upon a time there lived a prince.

10 5 7. Explain what you mean by inflexion. Give examples of all the inflexions of the language.

Values.

M. F.

24 12

8. State which of the following expressions are correct, giving your reasons :—

The $\left\{\begin{array}{c}\text{passing}\\\text{passage}\end{array}\right\}$ of the bill.

I differ $\left\{\begin{array}{c}\text{from}\\\text{with}\end{array}\right\}$ you.

The honor $\left\{\begin{array}{c}\text{bestowed}\\\text{conferred}\end{array}\right\}$ on me.

Such expressions sound $\left\{\begin{array}{c}\text{harsh}\\\text{harshly}\end{array}\right\}$.

$\left\{\begin{array}{c}\text{Whom}\\\text{Who}\end{array}\right\}$ do you say that I am.

It is a long time since I $\left\{\begin{array}{c}\text{have been}\\\text{was}\end{array}\right\}$ devoted to your interest.

As two $\left\{\begin{array}{c}\text{is}\\\text{are}\end{array}\right\}$ to four, so $\left\{\begin{array}{c}\text{is}\\\text{are}\end{array}\right\}$ four to eight.

It is better to fall among vultures than flatterers, for $\left\{\begin{array}{c}\text{those}\\\text{these}\end{array}\right\}$ devour only the dead, $\left\{\begin{array}{c}\text{those}\\\text{these}\end{array}\right\}$ the living.

Less than a million tons $\left\{\begin{array}{c}\text{are}\\\text{is}\end{array}\right\}$ produced in a year.

The temper, as well as the knowledge of a modern historian $\left\{\begin{array}{c}\text{require}\\\text{requires}\end{array}\right\}$ a more sober and accurate style.

In reality more than one principle $\left\{\begin{array}{c}\text{has}\\\text{have}\end{array}\right\}$ been contended for.

The following is the mode of $\left\{\begin{array}{c}\text{proceeding}\\\text{procedure}\end{array}\right\}$ in such a case.

16 8

9. What is the difference in meaning between

A king of France	and	a French King,
A serial story	"	a serious story,
Politic	"	political,
Practical	"	practicable,
An age of faith	"	an age of credit,
The silent man	"	the taciturn man,
Ingenious	"	ingenuous,
Conciliate	"	reconcile ?

[OVER.

Values.		
M.	F.	
8	5	10. Criticise the following definition :— A verb is a word which may be used as the predicate in a sentence without a copula.
12	1	11. Give the roots of *altitude*, *city*, *recluse*, *deign*, *hypothesis*, *autocrat*, *phrase*, *school*, *boon*, *call*, *chain*, *chief*.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 3.)

GEOGRAPHY.

Time—Two Hours.

Examiner—Geo. W. Ross.

Values.

5 1. Define Estuary, River-basin, Tropic, Neap-tide, Republic.

6 2 Explain the cause of Ocean Currents, and give the name and course of *three* of the most important.

12 3. Trace the Mississippi River from its source to its mouth, naming the chief tributaries from East and West, the States and chief towns bordering upon its banks, and the principal commercial products for which it affords an outlet.

12 4. Sketch that part of Europe from the Straits of Dover to the Gulf of Genoa, indicating the rivers, bays, capes and cities of importance along the coast.

11 5. Over what railroads, across what intersecting lines of railway, and through what cities and large towns would you pass on a trip from Berlin to Amherstburg?

10 6. What and where are Ste. Maurice, Scugog, Rimouski, Chignecto, Pelee, Shediac, Burrard, Roanoke, Galveston and the Cyclades?

16 7. Locate Cape St. Lucas, Havana, Staten Island, Yapura River, Jutland, Valparaiso, the Cambrian Hills, Cape Agulhas, Scilly Islands, Table Bay, Warsaw, Baikal, Tonquin, Ormuz, Loo Choo, and Zambezi.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 4.)

DICTATION.

TIME—THIRTY MINUTES.

Examiner—JAMES HUGHES.

But when men would go farther, when they would arraign christianity as having increased, on the whole, the sum of human misery, oh, then we have our appeal to the splendid institutions of civilized states, to the bulwarks of liberty which they have bravely thrown up, to the structures which they have reared for the shelter of the suffering, and to their mighty advancings in equity, and science, and good order, and greatness. We show you the desert blossoming as the rose, and all because ploughed by the sword christianity. We show you the human intellect springing into manhood, reason starting from dwarfishness, and assuming magnificence of stature, and all because roused by the glare of the sword christianity. Ay, if you can show us feuds, and jealousies, and wars, and massacres, and charge them home on christianity as a cause, we can show you whatsoever is confessed to minister most to the welfare, and glory, and strength, and happiness of society, stamped with one broad impress, and that impress the sword christianity: and, therefore, are we bold to declare that the amount of temporal misery has been immeasurably diminished by the propagation of the religion of Jesus; and that this sword, in spite of produced slaughter and divisions, has been, and still is, as a golden sceptre, beneath which the tribes of our race have found a rest which heathenism knew only in its poetry; a freedom, and a security, and a greatness, which philosophy reached only in its dreams.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 5.)

ARITHMETIC.

TIME—THREE HOURS.

Examiner—J. A. McLELLAN, LL.D.

VALUES—*Each* 10 *Marks.*

1. The G. C. M. of two numbers is 9187, and their L. C. M. is 634938944494: one of the numbers is 68590142, find the other.

2. (1) Divide 159.982 by .0009840018 to 7 places of decimals.

(2) Reduce $\frac{61}{4649}$ to a periodic decimal.

(3) Reduce $.7\dot{0}0245\dot{7}$ to a vulgar fraction.

3. There is a rectangular garden whose length is to its breadth as 6 to 5; running round its outside is a gravelled path 3 yards wide; this path cost, at $18\frac{3}{4}$ cents per square yard, \$127.25. Find the dimensions of the garden.

4. Simplify $\frac{2\sqrt{90}}{3\sqrt{108}}\times\frac{7\sqrt{192}}{5\sqrt{126}}\div\frac{4\sqrt{15}}{15\sqrt{21}}$. Find the mean proportional between 3402 and 15172; and extract the square root of .000097199881.

5. The oxygen of the air is 3 parts (by volume) in 14 of the whole; 100 cubic inches of air weigh 31 grains, and the weight of oxygen is to that of air as 53:48. Find the number of grains of oxygen in a cubic foot of air.

6. A, B, and C do a piece of work; it would have taken A $2\frac{1}{2}$ times as long as B and C together, and B $3\frac{1}{2}$ times as long as A and C together. If they receive \$240.40 for the work, how much should each man receive?

[OVER.

7. Assuming that 90 cubic inches of lead, together with 81 cubic inches of cork, are equal in weight to 2308 cubic inches of pine, and that the weights of equal bulks of lead and pine are represented by the numbers 226.48, and 9, respectively; determine the proportionate weight of an equal bulk of cork.

8. A merchant in Toronto owes £560 stg. in London, and remits as follows: first to Paris at 5 francs 60 centimes per $1; thence to Hamburg at 2 francs per marc; thence to Amsterdam at 17½ stivers per marc; thence to London at 224 stivers per £1. If the expense of this circuitous exchange be 2 per cent. (*i.e.* of $102 paid by the merchant, $2 is lost in commission), find what it costs to discharge the London debt.

9. I had two notes whose aggregate face-value was $761.70, and each of which had 15 months to run; one of the notes was discounted at 10 per cent. bank discount, and the other at 10 per cent. *true* discount, and the total amount realized was $671.50. Find the face of the note on which *true* discount was allowed.

10. A cylindrical silver wire, .0015 millimetre in diameter, weighs 3.2875 grammes; it is to be covered with a layer of gold .0002 millimetre in thickness. Required the weight of the gold, the specific gravity of silver being 10.47, and that of gold 19.26.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 6.)

HISTORY.

TIME—TWO HOURS AND A HALF.

Examiner—S. ARTHUR MARLING, M.A.

Values.

10 1. Tell what you know about the settlement of the Danes in England, and state what traces of that settlement still exist.

10 2. What were the causes, and what the results of the Peasant Insurrection of 1381 ?

10 3. What was the nature of the claim of Henry V. to the crown of France, and what was the issue of the claim ?

10 4. Give some account of 'monopolies', the 'Habeas Corpus Act', the Trial of Charles I., the Accession of William III.

10 5. Write a concise sketch of the reign of George III., with reference to [1] domestic politics, [2] foreign wars, [3] Literature.

10 6. Write an explanatory note on this passage from the text-book :—"From the twelfth century to the reign of Edward III., we may reckon three written languages in use in England."

10 7. When did the confederation of the Canadian Provinces take place, and what led to it ?

10 8. What is the difference between a federal and a legislative union ? When, and to what extent, did the latter exist in Canada ?

10 9. State the causes and the results of the third Punic war

10 10. Account for the great powers possessed by the Roman Emperor Augustus.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 7.)

ALGEBRA.

TIME—TWO HOURS AND A HALF.

Examiner—J. C. GLASHAN.

Values.

4 1. Find the value of $x^5+x^4-166x^3-166x^2+81x+81$
5 when $x=-\cdot7$; and the value of $x^3-3px^2+(3p^2+q)x-pq$
when $x=a+p$. (Arrange the latter result according to powers of a.)

4 2. What is the condition that $x+b$ shall be a factor of ax^2+bx+c?

Find the factors of

5 (a). $(a^2-ab)+2(b^2-ab)+3(a^2-b^2)+4(a-b)^2$;
8 and (b). $(ax+b)(bx+c)(cx+a)-(ax+c)(bx+a)(cx+b)$.

4 3. What must be the relation among a, b, c that ax^2+bx+c may be a perfect square?

5 *(a).* Extract the square root of

$$(a-b)^4-4(a^2+b^2)(a-b)^2+4(a^4+b^4)+8a^2b^2.$$

8 *(b).* If 5 be subtracted from the sum of the squares of any four consecutive numbers, the remainder will be a perfect square. (Prove this.)

5 4. If $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}$ and $\frac{h}{k}=\frac{l}{m}=\frac{n}{p}$

prove that $\frac{(a+c+e)(h+l+n)}{(b+d+f)(k+m+p)}=\frac{ah+cl+en}{bk+dm+fp}$.

5 *(a).* Reduce $\frac{ab(x^2-y^2)+xy(a^2-b^2)}{ab(x^2+y^2)+xy(a^2+b^2)}$ to its lowest terms.

8 *(b).* If $xy+yz+zx=1$ prove that

$$\frac{x}{1-x^2}+\frac{y}{1-y^2}+\frac{z}{1-z^2}=\frac{4xyz}{(1-x^2)(1-y^2)(1-z^2)}.$$

[OVER.

Values.

5. Prove that

5 (*a*) $\dfrac{2\{x+2+\sqrt{(x^2-4)}\}}{x+2-\sqrt{(x^2-4)}}=x+\sqrt{(x^2-4)}$.

5 (*b*) $(b+c-a)a^{\frac{1}{2}}+(c+a-b)b^{\frac{1}{2}}+(a+b-c)c^{\frac{1}{2}}=$
$(a+b+c)(a^{\frac{1}{2}}+b^{\frac{1}{2}}+c^{\frac{1}{2}})-2(a^{\frac{3}{2}}+b^{\frac{3}{2}}+c^{\frac{3}{2}})$.

6. Solve the equations—

5 (*a*). $(b-c)(x-a)^3+(c-a)(x-b)^3+(a-b)(x-c)^3=0$.

8 (*b*). $x+y=4xy$; $y+z=2yz$; $z+x=3zx$.

8 (*c*). $x+y+z=0$.
$ax+by+cz=0$.
$bcx+cay+abz+(a-b)(b-c)(c-a)=0$.

8 (*d*). $\dfrac{x-1}{x+3}+\dfrac{x-3}{x+1}+2=0$.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 8.)

NATURAL PHILOSOPHY.

TIME—TWO HOURS AND A HALF.

Examiner—J. J. TILLEY.

Value of each of the first six questions 13, *and of each of the last three* 14.

1. What conditions are necessary so that three forces acting on a body may maintain equilibrium?

Show how the following forces may be arranged so as to produce equilibrium:—(i.) 4 lbs., 5 lbs. and 7 lbs. (ii.) $(\sqrt{7}+\sqrt{5})$ lbs., $(\sqrt{7}-\sqrt{5})$ lbs., and $2\sqrt{7}$ lbs. (iii.) 1lb., 4lbs. and $\sqrt{17}$ lbs.

2. Examine the truth of the following statement:—"If three forces acting on a body are parallel to the sides of a triangle they will keep it at rest."

A rod AC (supposed without weight) hinged at C has a weight of 200 lbs. hung at A, and is kept in position by a horizontal tie-rod AB. The angle BAC is 30°; find the tension of the tie-rod and the thrust along AC.

3. If two sides of an equilateral triangle, taken in order 8 ft. long, represent in direction and magnitude two forces acting at a point, find two equal forces, acting at an angle of 120° to each other, which will, with these forces, produce equilibrium.

4. In a system of four pulleys, each hanging by a separate string, the weight of each pulley being 1lb., find the relation between the power and the weight.

If a force of $2\frac{1}{2}$ lbs. just supports a weight of 45 lbs. in such a system, and the weight of the pulleys be equal, find the weight of each pulley.

[OVER.

5. If a substance be weighed in a balance having unequal arms, and in one scale appear to weigh m lbs., and in the other 4 n lbs., what is the true weight of the substance, and what is the ratio between the lengths of the arms of the balance?

6. Find the ratio of the power to the weight in the case of the inclined plane when the power acts [i.] parallel to the plane, [ii.] parallel to the base.

Show that the power is most effective when acting parallel to to the plane.

7. Define Specific Gravity, and show how to find the specific gravity of a body lighter than water.

A piece of wood weighs 4 lbs. in air and a piece of lead weighs 5 lbs. in water. The lead and the wood together weigh 4 lbs. in water; determine the specific gravity of the wood.

8. Describe, using diagram, the structure of the Lifting Pump. What determines the height to which water may be raised by means of it?

Describe the thermometer. At what temperature will the reading of the Fahrenheit thermometer be three times as great as that of the Centigrade? Give your answer in degrees Fahrenheit.

9. A cubical block of wood whose edge is 18 inches and whose sp. gr. is .75 is placed in water and pressed by a force into such a position that its upper surface, which is horizontal, is just 1 foot below the surface of the water; find the pressure on the whole outside of the cube, and the downward force acting upon it.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 9.)

LATIN.

TIME—THREE HOURS.

Examiner—S. ARTHUR MARLING, M.A.

Values.

I.

CICERO, *in L. Catilinam*, II., III., IV.

(a) Translate:

10 Quamquam isti, qui Catilinam Massiliam ire dictitant, non tam hoc queruntur quam verentur. Nemo est istorum tam misericors, qui illum non ad Manlium quam ad Massilienses ire malit. Ille autem, si mehercule hoc, quod agit, nunquam ante cogitasset, tamen latrocinantem se interfici mallet quam exsulem vivere. Nunc vero, quum ei nihil adhuc præter ipsius voluntatem cogitationemque acciderit, nisi quod vivis nobis Roma profectus est, optemus potius, ut eat in exsilium, quam queramur.

2 (1) *Isti.* What is the force of the word?

3 (2) Show the connection of this passage with the argument.

2 (3) Before whom was this oration pronounced?

(b) Translate:

10 Itaque illorum responsis tunc et ludi per decem dies facti sunt, neque res ulla, quæ ad placandos deos pertineret, prætermissa est: iidemque jusserunt simulacrum Jovis facere majus et in excelso collocare et contra, atque ante fuerat, ad orientem convertere: ac se sperare dixerunt, si illud signum, quod videtis, solis ortum et forum curiamque conspiceret, fore, ut ea consilia, quæ clam essent inita contra salutem urbis atque imperii, illustrarentur, ut a senatu populoque Romano perspici possent.

6 (1) Mark the quantity of the penult. in *inita, pertineret, perspici.*

12 (2) Parse *responsis, placandos, inita,* giving the principal parts.

[OVER.

Values.

Translate:

14 Sed ea, quæ exaudio, Patres conscripti, dissimulare non possum. Jaciuntur enim voces, quæ perveniunt ad aures meas, eorum, qui vereri videntur, ut habeam satis præsidii ad ea, quæ vos statueritis hodierno die, transigunda. Omnia et provisa et parata et constituta sunt, Patres conscripti, quum mea summa cura atque diligentia, tum multo etiam majore populi Romani ad summum imperium retinendum et ad communes fortunas conservandas voluntate. Omnes adsunt omnium ordinum homines, omnium denique ætatum; plenum est forum, plena templa circum forum, pleni omnes aditus hujus templi et loci. Causa est enim post urbem conditam hæc inventa sola, in qua omnes sentirent unum atque idem præter eos, qui, quum sibi viderent esse pereundum, cum omnibus potius quam soli perire voluerunt.

6 + 1 + 4 + 2 = 13 (1) Decline *aures, loci, soli;* give the gender of *ordinum;* conjugate *transigunda, pereundum;* account for the mood of *viderent.*

1 (2) *Conscripti*—What is the origin of the term?

1 (3) Distinguish *vereor ut* and *vereor ne.*

6 (4) Turn into Latin—*We must all perish; I see of what consequence it is to me.*

II.

VIRGIL—*Eclogues.*

(a) Translate:

21 MEL. Impius hæc tam culta novalia miles habebit?
Barbarus has segetes? en, quo discordia cives
Produxit miseros! en, queis consevimus agros!
Insere nunc, Melibœe, piros, pone ordine vites:
Ite meæ, felix quondam pecus, ite capellæ.
Non ego vos posthac, viridi projectus in antro,
Dumosa pendere procul de rupe videbo;
Carmina nulla canam; non, me pascente, capellæ,
Florentem cytisum et salices carpetis amaras.
TIT. Hic tamen hanc mecum poteras requiescere noctem
Fronde super viridi; sunt nobis mitia poma,
Castaneæ molles, et pressi copia lactis;
Et jam summa procul villarum culmina fumant,
Majoresque cadunt altis de montibus umbræ.

4 (1) *Impius, barbarus*—Why these epithets?

4 (2) *Queis* to *agros*—Explain the meaning.

12 (3) Parse *consevimus, pendere, pascente,* giving the principal parts.

8 (4) Explain the construction of *noctem* and *nobis.*

Values.

18 (*b*) Translate:

Prima Syracosio dignata est ludere versu
Nostra neque erubuit silvas habitare Thalia.
Quum canerem reges et prœlia, Cynthius aurem
Vellit, et admonuit: "Pastorem, Tityre, pingues
Pascere oportet oves, deductum dicere carmen." 5
Nunc ego (namque super tibi erunt, qui dicere laudes,
Vare, tuas cupiant, et tristia condere bella,)
Agrestem tenui meditabor arundine Musam.
Non injussa cano. Si quis tamen hæc quoque, si quis
Captus amore leget; te nostræ, Vare, myricæ, 10
Te nemus omne canet; nec Phœbo gratior ulla est,
Quam sibi quæ Vari præscripsit pagina nomen.

12 (1) Scan ll. 2, 3, 5, 6, marking all quantities.

3 (2) Explain the meaning of l. 1.

3 (3) *Deductum*—What is the meaning?

8 (4) Write short notes on *Thalia, Cynthius.*

4 (5) What figure in l. 6?

10 (6) Scan the following lines, and notice peculiarities of metre:

Ille latus niveum molli fultus hyacintho
Vir gregis ipse caper deeraverat; atque ego Daphnim.

13 (7) Quote the speech of Melibœus (Ecl. I.), commencing 'Fortunate senex,' &c., *or*, the prophecy (Ecl. IV.), commencing 'At tibi prima, puer,' &c.

III.

GRAMMAR AND COMPOSITION.

12 + 4 = 16 1. Decline in both numbers *deus, vis, bos, celer; eadem filia.*

2 × 3 = 6 2. Compare *dives, maledicus, arduus.*

6 × 4 = 24 3. Write in full the future perfect indicative, the present and imperfect subjunctive, and the present infinitive of *malo, fero, fio, edo.*

4 4. Which are the *primary,* and which the *historic tenses?*

8 5. Give rules, with examples, for the case of the name of the place where anything happens.

8 6. What verbs take a double accusative? What is a cognate accusative? Give examples in Latin.

[OVER.

Values.

7. Translate into Latin—

10 (*a*) A lion advised a goat walking on the top of a rock to descend into the meadow. But the goat answered him, 'I am not one to prefer pleasure to safety.

4 (*b*) He threatened me with death.

20 (*c*) (The Latin words are given below). Do you, Romans, since it is now night, having paid your adorations to Jupiter yonder, the guardian of this city and of yourselves, depart to your several abodes, and, though the peril is for the time averted, nevertheless defend them with watchmen and sentinels just as (you did) the night before. I will take care that you shall not have to do it very long (compar.), and that you may be able to live (lit. to be) in lasting peace.

Tu, Quiris, quoniam jam nox sum, veneror Jupiter ille, custos hic urbs ac tu, in vester tectum discedo, et is, quamquam jam sum periculum depello, tamen æque ac prior nox custodia vigilia que defendo. Is ne tu diu facio sum atque ut in perpetuus pax sum possum provideo.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 10.)

FRENCH.

TIME—THREE HOURS.

Examiner—S. ARTHUR MARLING, M.A.

Values.

I.

DE FIVAS : *Introduction.*

20 Translate :

Une aventure heureuse vint accroître son petit trésor. Il trouva un jour un cachet d'or armorié. Il le fait annoncer au prône : un Anglais se présente, et le réclame. S'il est à vous, dit Valentin, je vous prie de le blasonner. Tu te moques de moi, répond l'Anglais étonné ; le blason n'est pas assurément de ton ressort. Soit, répond le jeune pâtre ; mais, je vous déclare qu'à moins de blasonner votre cachet vous ne l'aurez pas. Surpris de ce ton ferme, l'Anglais obéit, et reçut ensuite son cachet. Voulant récompenser celui qui le lui avait rendu, il l'invita à le venir voir. Par sa générosité, la bibliothèque de Valentin s'éleva à quatre cents volumes, tandis qua sa garde-robe restait toujours la même. Un sarrau de toile ou de laine, un mauvais bonnet et des sabots composaient tout son ajustement ; mais c'était là la moindre de ses inquiétudes.

8 1. Give the indic. pres. throughout, of 'accroître', 'reçut'.

4 2. 'Blasonner'. Explain the meaning.

6 3. Parse *surpris, obéit.*

4 4. 'Cents'. When does *cent* take, and when does it not take, the form of the plural ?

[OVER.

Values.

II.

SOUVESTRE: *Un philosophe sous les toits.*

20 *(a)* Translate:

Une des singularités de Paris est de réunir vingt populations complétement différentes de mœurs et de caractère. A côté des bohémiens du commerce et de l'art, qui traversent successivement tous les degrés de la fortune ou du caprice, vit une paisible tribu de rentiers et de travailleurs établis, dont l'existence ressemble au cadran d'une horloge sur laquelle la même aiguille ramène successivement les mêmes heures. Si aucune autre ville n'offre des vies plus éclatantes, plus agitées, aucune autre ne peut en offrir de plus obscures et de plus calmes. Il en est des grandes cités comme de la mer: l'orage ne trouble que la surface; en descendant jusqu'au fond, vous trouvez une région inaccessible au mouvement et au bruit.

4 1. 'bohémiens'. Explain this term.

8 2. Parse *vit*, giving the principal parts.

6 3. 'éclatantes'. When does the present participle agree with its noun?

16 *(b)* Translate:

—Chaufour, que je me disais en riant tout bas, après l'épée le marteau, après le marteau le balai; tu dégringoles, mon vieux, mais tu sers toujours ta patrie.

— Cependant, vous avez fini par quitter votre nouvelle profession? ai-je repris.

— Pour cause de réforme, voisin; les balayeurs ont rarement le pied sec, et l'humidité a fini par raviver les blessures de ma bonne jambe. Je ne pouvais plus suivre l'escouade; il a fallu déposer les armes. Voilà deux mois que j'ai cessé de travailler à *l'assainissement de Paris.*

6 1. Explain the meaning of the first sentence.

6 2. Give an account of the speaker.

10 3. Quote expressions used by him indicative of his profession.

4 4. *Tout.* When does this adverb change its form?

4 5. *Assainissement.* Give the derivation.

Values.

25 (*c*) Translate:

J'ai dédaigné les paroles qui n'avaient d'autre grace que leur sincérité; j'ai cessé d'aimer les hommes, seulement parce que c'étaient des hommes, je les ai aimés pour leur supériorité; j'ai resserré le monde dans les étroites limites d'un panthéon, et ma sympathie n'a pu être éveillée que par l'admiration. Cette foule vulgaire que j'aurais dû suivie d'un œil ami, puisqu'elle est composée de frères en espérances et en douleurs, je l'ai laissée passer avec indifférence, comme un troupeau. Je m'indigne de voir celui qu'enivre son or mépriser l'homme pauvre des biens terrestres, et moi, vain de ma science futile, je méprise le pauvre d'esprit. J'insulte à l'indigence de la pensée comme d'autres à celle de l'habit; je m'enorgueillis d'un don et je me fais une arme offensive d'un bonheur!

6 1. Give a summary of this chapter.

4 2. *j'ai reserré* to *panthéon.* Explain the meaning.

3 3. *enivre.* What is the subject?

3 4. *mépriser.* Explain the construction.

4 5. *j'insulte à l'indigence.* Write a list of verbs followed by *à*.

10 6. Explain the phrases 'à la dérobée', 'me voici de retour', 'à partir de cette journée', 'il s'agit de se conduire comme un homme'.

III.

GRAMMAR AND COMPOSITION.

8 1. Give examples to show the difference between demonstrative adjectives and demonstrative pronouns.

6 2. When does *on* take the euphonic l', and what are the exceptions?

9 3. Distinguish *quelque* and *quel que*, *homme brave* and *brave homme*, *un nouveau livre* and *un livre nouveau.*

18 4. Write the third pers. sing. and plu. of the pres. indic. of *joindre, ouvrir, dormir, appeler, moudre;* and the second pers. plu. pret. ind. and the past participle of *savoir, vaincre, écrire, mouvoir.*

[OVER.

Values.

6 5. Render into French the sentences 'neither the one nor the other will obtain the prize'; 'I know your sisters, neither the one nor the other will write to you'; and state the rule for the concord of the verb.

42 6. Translate into French:

(a) The rose which I have gathered.
(b) That I (fem.) may have been happy.
(c) They have always complained of their misfortunes.
(d) My father was a bookseller.
(f) He asked his father for the newspaper.
(g) Is it I that you are speaking to? Yes, it is.
(h) Honesty (probité) is one of the finest qualities that a man can possess.

30 7. Render into English:

Il faut convenir que depuis plusieurs jours leurs fatigues avaient été excessives et sans aucun intervalle de délassement. L'inaction du capitaine achevait encore de les abattre. Cependant, à force d'encouragements et de promesses, et par une distribution de vin que j'ordonnai fort à propos pour les réchauffer, je parvins à vaincre leur répugnance. L'interruption du travail avait fait entrer un pied d'eau de plus dans la cale *(hold)*; mais leur activité se ranimant par la chaleur de la boisson que je leur faisais donner toutes les demi-heures, ils soutinrent avec tant de constance l' effort de la manœuvre, que l'eau fut bientôt réduite à moins de trois pieds.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 11.)

GERMAN.

TIME—THREE HOURS.

Examiner—J. M. BUCHAN, M.A.

Values.

45 1. Translate into idiomatic English:

„Was hör' ich draußen vor dem Thor,
Was auf der Brücke ſchallen?
Laß den Geſang vor unſerm Ohr
Im Saale wiederhallen!"
Der König ſprach's, der Page lief:
„Laßt mir herein den Alten!"

„Gegrüßet ſeid mir, edle Herrn',
Gegrüßt ihr, ſchöne Damen!
Welch reicher Himmel! Stern bei Stern
Wer kennet ihre Namen?
Im Saal voll Pracht und Herrlichkeit
Schließt, Augen, euch; hier iſt nicht Zeit,
Sich ſtaunend zu ergötzen."

Der Sänger drückt die Augen ein,
Und ſchlug in vollen Tönen;
Die Ritter ſchauten muthig drein,
Und in den Schooß die Schönen.
Der König, dem das Lied gefiel,
Ließ, ihn zu ehren für das Spiel,
Eine goldne Kette reichen

5 (i.) Translate into German—*I have heard him sing.*

10 (ii.) When is the infinitive employed without zu?

3 (iii.) Parse mir, l. 8.

3 (iv.) Decline Welch reicher Himmel, l. 10.

2 (v.) Distinguish between Was für ein Himmel? and Welcher Himmel?

[OVER.

Values.

5 (vi.) Translate into German— *A hall full of men and women.*

1 (vii.) Give the past indicative, past subjunctive, and past participle of kennen.

3 (viii.) Decline the declinable words in l. 11.

3 (ix.) Parse ſtaunend, l. 14. Why is it not inflected?

1 (x.) What is the object of ſchlug, l. 16?

2 (xi.) Translate l. 17 literally.

3 (xii.) Parse Kette, l. 21.

6 (xiii.) Distinguish wieder from wider,
der Thor " das Thor,
Lied " Leid,
rief " reif,
Ritter " Reiter,
ſchön " ſchon.

5 (xiv.) Decline der, the article, der, the relative, Stern, Ohr, and Auge, prefixing the proper form of the indefinite article to each of the nouns.

20 (xv.) Write down the third singular present indicative, past indicative, and past subjunctive, the second singular imperative, the present infinitive, and the past participle of the verbs in ll. 5, 6, 7, 13, 15, 16, and 19.

10 (xvi.) Write down from memory the remainder of the ballad.

10 (xvii.) Write a brief note on the life of its author.

2. Translate into idiomatic English:

45 Gerade ſo wie ich, tritt ja Odyſſeus unerkannt in den Hof des Eumäos, ſeines alten Dieners. Dieſer ſitzt auch im Vorhauſe in dem umſchatteten Platze, weiſ't die Hunde zur Ruhe, und nachdem er dem Fremden einen hohen Sitz von weichen Fellen bereitet hat, heißt er ihn Platz nehmen, und ſetzt ihn Wein und Speiſe vor. Und da ſich Odyſſeus der freundlichen Bewirthung erfreut, und dem Geber Segen dafür wünſcht, ſagt dieſer: „Es iſt mir nicht geſtattet, auch wenn ein ſchlechterer Mann als du hierher käme, einen Fremden zu verachten: denn alle Fremden und Armen ſtehen unter Obhut der Götter."

1 (i.) Who was Odyſſeus?

3 (ii.) ſetzt ihn Wein und Speiſe vor. Explain the construction.

3 (iii.) ſich Odyſſeus der freundlichen Bewirthung erfreut Explain the construction.

1 (iv.) geſtattet. From what verb?

Values.

3. Translate into English:

10 Die benachbarten britanniſchen und däniſchen Küſten waren die erſten, die von ihren Schiffen beſucht wurden. Die engliſche Wolle, die dieſe zurückbrachten, beſchäftigte [employed] tauſend fleißige Hände in Brügges, Gent, und Antwerpen, und ſchon in der Mitte des zwölften Jahrhunderts wurden flandriſche [Flemish] Tücher in Frankreich und Deutſchland getragen.

4. Translate into German:

A

50 Will you stay with us to-day?

Give me some bread, a slice of ham, and a glass of water.

Have the goodness to tell me what o'clock it is.

He returned the book to me.

Have you begun your letter already?

I have laid it on the table.

What am I to do?

Have you much money?

His teeth are very white.

My father's friends have arrived.

B

25 *The German words to be used in this exercise are given below in order.*

Why should not men, too, honor him whom the Creator honors? Upon the head of the wise and virtuous man gray hair is a fine crown. Three old men were celebrating their jubilee together, and telling their children why they had lived so long. One, a teacher and priest, said: "Never did I mind the length of the way, when I went out to teach; never did I haughtily stride away over the heads of the young; and never did I raise my hands to bless without really blessing and praising God: therefore have I lived so long."

Wer der Schöpfer ehren, warum ſollen nicht auch der Menſch ehren? Auf der Verſtändig und Tugendhaft Haupt ſeyn ein grau Haar ein ſchön Krone. Drei Greis feiern zuſammen ihr Jubelfeſt, und erzählen ihr Kind, woher er ſo alt werden. Der ein, ein Lehrer und Prieſter, ſprechen: „Nie kümmern ich, wann ich zu lehren auſgehen, der Länge der Weg; nie ſchreiten ich anmaßend über der Haupt der Jugend hinweg, und heben ber Hand nie auf zu der Segnen, ohne daß ich wirklich ſegnen und Gott loben: darum ſeyn ich ſo alt werden."

[OVER.

Values.

C

25 It was no longer as warm as in summer, but the air was soft and the sky clear. The vines were loaded with ripe clusters.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 12.)

EUCLID.

TIME—TWO HOURS AND A HALF.

Examiner—J. J. TILLEY.

Values.	
6	1. Define Right Angle, Rectilineal Figure Scalene Triangle, Postulate, Parallel Straight Lines, Gnomon.
10	2. *(a)* If two triangles have two sides of the one equal to two sides of the other, each to each, but the angle contained by the two sides of the one greater than the angle contained by the two sides of the other, the base of that which has the greater angle shall be greater than the base of the other.
4	*(b)* What restriction does Euclid make in his construction, and why?
10	3. The opposite sides and angles of a parallelogram are equal to one another and the diameter bisects it, that is, divides it into two equal parts.
10	4. To describe a parallelogram that shall be equal to a given triangle, and have one of its angles equal to a given rectilineal angle.
10	5. If a straight line be divided into any two parts, the rectangle contained by the whole and one of the parts is equal to the rectangle contained by the two parts together with the square on the aforesaid part.
10	6. If a straight line be divided into two equal, and also into two unequal parts, the squares on the two unequal parts are together double of the square on half the line, and of the square on the line between the points of section.

[OVER.

Values.	
10	7. Through a given point draw a line, so that the parts of it, intercepted between that point and perpendiculars upon it from two other given points, may be equal to each other.
10	8. BCDF is a four-sided figure having the side BC parallel to the side FD. If BD and FC be joined by straight lines intersecting in K, show that the lines BD and CF are together greater than the two lines BF and CD, also that the triangle CKD is equal to the triangle BKF.
10	9. ABCD is a rectangle, E any point in BC, and F any point in CD. If AF, AE and EF be joined, show that the rectangle ABCD is equal to twice the triangle AEF, together with the rectangle EB. DF.
10	10. Produce one side of a scalene triangle so that the rectangle under it and the produced part may be equal to the difference of the squares on the other two sides.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 13).

COMPOSITION.

TIME—ONE HOUR AND A QUARTER.

Examiner—JAMES HUGHES.

Each candidate may choose any one of the following topics:—

1. The Art of Questioning.
2. The Benefits Arising from the Study of History.
3. The Death of Brock.
4. The World in 1980.

The value of this paper is 75. The Examiners, when valuing the composition, will take into consideration, among other things,

The formation of the sentences.
The purity of the language used.
The grammar.
The punctuation.
The spelling and the use of capitals.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 14).

CHEMISTRY.

TIME—ONE HOUR AND A HALF.

Examiner—J. A. McLELLAN, LL.D.

10 *Marks for each question.*

1. Describe the chief characters of (1) ammonia, (2) ammonium carbonate; and the process by which they are usually prepared. Give also the chemical re-actions which occur in these processes.

2. Describe fully the modes of decomposing water, which you have seen. State how you would determine whether a given specimen of water is hard or soft. If the water is found to be hard, state (with reasons) the various means by which it could be made soft.

3. What means are best employed for the collection of nitric oxide, chlorine, ammonia, carbonic acid, sulphur dioxide, and nitrous oxide gases.

4. Describe fully the experiment in which the reactions are given by the equation

$$CaCO_3 + 2HCl = CaCl_2 + H_2O + CO_2.$$

5. Describe some of the properties of sulphur, and state its allotropic modifications, and how they are obtained. Sulphur is said to be a *dimorphous* body—explain.

6. Calculate the percentage composition by weight of potassium nitrate, and of the two oxides of carbon.

7. Write down the atomic weight, the molecular weight, the relative weight, the specific gravity, the atomic and the molecular volume of chlorine, and fully explain the meaning of these terms.

[OVER.

8. Complete the following equations:—

$FeS + H_2So_4 =$
$Na_2\,SO_3 + S =$
$CaO + Na_2CO_3 + HO =$
$So\,O_2 + 4HF =$

9. Describe a mode of preparing sulphur dioxide, and give and explain the equations representing the reactions. Explain the difference between the bleaching action of chlorine and sulphurous acid.

10. On completely decomposing by heat a certain weight of potassium chlorate, 20.246 grains of potassium chloride was obtained. What weight of potassium was used, and how much oxygen was evolved?

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

SECOND CLASS TEACHERS AND INTERMEDIATE.

(No. 15.)

BOOK-KEEPING.

TIME—ONE HOUR AND A QUARTER.

Examiner—JOHN J. TILLEY.

Values.

7 1. Define Trial Balance, Balance Sheet, Posting, Blank Credit, Invoice, Bill Book, Consignment.

5 2. Wherein does a promissory note differ from a draft?

6 3. Upon closing the merchandise account, how do you ascertain the gain or loss?

12 4. When do we debit, and when credit, the following accounts:—Cash, Merchandise, Bills Payable, Loss and Gain, Interest, Stock?

16 5. James Tait bought from John West, of Toronto, July 10th, 1879, 150 lbs. tea at 75c. per lb., 200 lbs. sugar at 14c. per lb., 300 gallons coal oil at 20c. per gal., 1 bbl. fish, $20, and gave, in payment, cash $100, an accepted order on A.B. for $40, a note held by Tait against West, $50, balance to remain on account.

(a) Make out bill in full for Tait.

(b) Give West's Journal entries in full, supposing that on the 15th of July he accepted $35 as full payment of the order by A.B., and deposited it in Ontario Bank.

20 6. Journalize the following:—*(a)* May 1st, 1879, I commenced business with the following: Cash, $4000; Real Estate, $2500; Mdse., $3500; Coal, for store, $40. I owe John Brown, for mdse., $800; a note of $200, in favour of A. Smith, given March 15th, 1879, for 1 year, with interest at 8 per cent.

[OVER.

Values.

(b) Sold mdse. to R. Jones, $600, and received in payment, cash, $450; his note at 90 days for balance.

(c) Ontario Bank discounted Jones' note, and gave me proceeds, in cash, $146.

(d) I lost a $10 note.

14 7. Give Day Book entries for the following:—

Dr.	Mdse.		*Cr.*
To Stock	$2500.	By Cash	$800
" Bank	500.	J. Hurd	80
" Bills Payable	250.	Bills Receivable	150
" J. Rose	150.	" Payable	150
" Sundries	100.	Shipment to J. Smith	300

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

(No. 16.)

COMPOSITION.

TIME—ONE HOUR.

Examiner—GEO. W. ROSS.

Read to the candidates the selection on page 220, 4th Reader—

"William Tell and his Son."

One hour to be allowed candidates to reproduce the story in their own language.

Value—75.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

(No. 17.)

GEOGRAPHY.

TIME—TWO HOURS.

Examiner.—JAMES HUGHES.

Values.	
5+5	1. How would you illustrate to your school the causes of day and night? Of Summer and Winter?
6	2. Name the largest two inland seas or salt lakes in the world.
12	3. Through what waters would a vessel freighted at Montreal have to pass to deliver her cargo partly at London and partly at St. Petersburg?
4+4	4. What Zones have four Seasons? Why?
4	5. What body of water furnishes most sea coast for Germany?
20	6. Sketch a map of the British Islands, and mark the positions of the following:—Liverpool, Glasgow, Bristol, Cork, Belfast, Stirling, Newcastle, Londonderry and Birmingham; the Clyde, the Severn, the Foyle, the Tay, the Shannon, the Ouse.
20	7. Name the cities of Ontario, the counties in which they are situated, and the leading railroads running to each.
10	8. Name the five principal commercial cities of Europe.
10	9. What are the chief exports and imports of Canada?

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

(No. 18.)

ARITHMETIC.

TIME—THREE HOURS.

Examiner—J. A. McLELLAN, LL.D.

Values.

10 1. Examine the statement "Division is a short method of Subtraction." Apply your answer to illustrate the following examples:—(1) Divide \$48 by \$16. (2) Divide \$48 by 16. Divide \$48 among 16 boys.

6 2. Explain clearly the principles involved in finding the sum of two fractions.

Simplify

18 $$\tfrac{1}{5}\,(3\tfrac{1}{3}+1\tfrac{1}{4}) \text{ of } £1+\tfrac{1}{4} \text{ of } \frac{1\frac{1}{8}-\frac{1}{3}\text{ of } 1\frac{5}{6}}{\frac{1}{10}\text{ of } 3\frac{1}{3}+\frac{13}{72}}\times .95 \text{ of } 5s.+\frac{2.1}{.012}d.$$

2 3. What is the square of a number? The square root?

4 Explain why, in extracting the square root of a number, you mark off the number into "periods of two figures each.

12 Simplify $(3\sqrt{32}-2\sqrt{28})\div(\sqrt{32}-\sqrt{28})$.

5 4. Define *ratio*, *proportion*, and *mean proportional*.

12 The quantity of saline matter in sea-water is .036 of the whole weight, and of this weight $.06\dot{1}$ is magnesia. Find the number of grains of magnesia in a cubic foot of sea-water, supposing 32 cubic feet of it weigh 2000℔s.

8 5. Shew that "Bank" discount exceeds "True" discount by the simple interest on the True discount.

14 If \$6 be allowed as true discount on a bill of \$150 having a certain time to run, what would be the discount if the bill had twice as long to run?

20 6. A. and B. form a partnership, A. supplying 25% more capital than B. At the end of the year A. withdraws 60% of his capital, and B. withdraws 40% of his; at the end of two years there is a gain of \$3383.50 to be divided. How much does each receive?

[OVER.

Values.

24 7. A merchant bought 350 yards of silk and 1470 yds. of lustre, the price per yard of the lustre being 30% that of the silk; he sold the silk at a gain of 35%, and the lustre at a loss of $33\frac{1}{3}$%, and lost on the whole $39.20 Find the cost price of the silk per yard.

25 8. An agent sold a consignment of flour for $4800, and invested the proceeds (less his commission on both transactions) in the purchase of tea, receiving on the latter purchase 4 per cent. on the amount invested. His commission on both transactions being $300, find his rate of commission on the sale of the flour.

15 9. Find to six decimal places the average of $2\frac{3}{5}$, 2.37, $3.\dot{0}0\dot{6}$, 0, $2.97\frac{4}{7}$, and $3.\dot{5}1\dot{6}$.

25 10. There is a garden-plot in the form of a trapezoid, whose two parallel sides are 40 yards and 50 yards respectively, the other sides being respectively 30 yards and 24 yards. Shew that the perpendicular distance between the parallel sides is $\frac{32}{5}\sqrt{11}$.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

ARITHMETIC.

Answers.

2. £1 14*s*. $1\frac{1}{4}$*d*.
3. $10+2\sqrt{14}$, or 17.4833+.
4. $962\frac{1}{2}$ grains.
5. $11\frac{7}{13}$. For 1st part see H. Smith's Arith., p. 335.
6. A, $1767.50; B, $1616.
7. $1.60 per yard.
8. $2\frac{1}{2}$ per cent.
9. 2.·411483.
10. The perpendicular distance between the *parallel* sides will be found to be $\frac{32}{5}\sqrt{11}$.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

(No. 19.)

HISTORY.

TIME—TWO HOURS AND A QUARTER.

Examiner—J. M. BUCHAN, M.A.

Values.	
10	1. What historical reasons can you urge for concluding that the English of the present day are of mixed blood?
30	2. Tell how Ireland, Wales, and Scotland were brought under the authority of the king of England.
30	3. Give an account of the English religious revolution in the sixteenth century, from its beginning until Protestantism was finally established.
20	4. Sketch the history of the reign of Anne.
30	5. Write historical notes on Oliver Cromwell. Jacques Cartier. Sir Robert Peel.
30	6. Briefly state the leading facts in regard to the founding and peopling of the English colonies which afterwards became the United States of America.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

(No. 20.)

DICTATION.

TIME—TWENTY MINUTES.

Examiner—GEO. W. ROSS.

In this apartment guests were received with imposing ceremony, and the patron heard the complaints, supplications, and adulations of his great band of clients or dependents, who lived on his smiles and bounty, but chiefly on the latter. Issuing thence, the visitor found himself in the *tablinum*, an apartment paved with mosaic, and decorated with paintings, in which were kept the family papers and archives. It contained a dining room and a supper room, and a number of sleeping rooms, hung with the softest Syrian cloths; a cabinet, filled with rare jewels and antiquities, and sometimes a fine collection of paintings; and, last of all, a pillared peristyle, opening out upon the garden, in which the finest fruit hung temptingly in the rich light of a golden sky, and fountains, which flung their waters aloft in every imaginable form and device, cooled the air and discoursed sweet music to the ear; while from behind every shrub there peeped out a statue or the bust of some great man, carved from the purest white marble, and placed in charming contrast with bouquets of rare flowers springing from stone vases.

Value—75.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

(No. 21.)

ENGLISH GRAMMAR AND ETYMOLOGY.

TIME—THREE HOURS.

Examiner—S. ARTHUR MARLING, M.A.

Values.

1. " *What* may follow your course of obstinacy, if *persisted in*, I cannot take upon me to *predict*, nor do I wish to conjecture; but this I know full well, that, *as sure as* man is mortal, and to *err* is human, justice deferred enhances the price at which you must expect safety and peace; nor can you expect to gather in another crop than they *did* who went before you, if you persevere in their utterly abominable husbandry, of sowing injustice and reaping rebellion."—*Brougham.*

15 (1) Divide the sentence into propositions; state their kind and connection; and fully analyse such as are dependent.

2×9=18 (2) Parse the nine italicized words.

1×19=19 (3) Pick out those words in the passage which are derived from a Latin source; give the root of each, and the meaning of the root.

3 (4) Give the rule for the double *r* in 'deferred.'

3×3+6=15 (5) Write equivalent expressions for 'take upon me', 'to err is human', 'they who went before you'; and show that the phrase 'justice deferred' has the force of a conditional proposition.

3×6=18 2. Define the following grammatical terms, giving an example of each, and showing how your definition applies to your example:—Relative Pronoun, Case, Preposition, Inflection, Pronominal Adverb, Correlative Conjunction.

(OVER.

Values.

$1\times8+1\frac{1}{2}\times10=23$ 3. Write the feminine forms of *tiger* and *abbot;* the diminutives of *goose, sack, hill* and *lamb;* the possessive of *you* and *us;* the present participle, the past tense, and the past participle of *dye, die, thrive, sit, swell, lay, expel, flow, fly, flee.*

12 4. Construct examples to show the various ways in which the meaning of the verb may be modified.

$3\times10=30$ 5. Parse the italicized words in the following:—

(*a*) I retired from the spot; *not but* that I could have safely remained, had I chosen.

(*b*) O *that* the desert *were* my dwelling place!

(*c*) *It* is impossible *to make people understand* their ignorance; for it requires knowledge *to perceive* it.

$2\times7=14$ 6. State the force of the following prefixes, and give an example of each:—'with', 'for', 'en', 'di', 'retro', 'per', 'in'.

$6\times3=18$ 7. Show wherein the following sentences are ungrammatical, and correct them:—

(*a*) The committee was divided in its opinions.

(*b*) He that was dead sat up, and began to speak.

(*c*) There are many faults in spelling which neither analogy nor punctuation justify.

(*d*) I remember of hearing a teacher's complaining that there was some of his scholars that no matter how clear he explained the lesson some of them would not understand it, not even if they said so, just because they didn't want to.

$2\times4=12$ 8. Distinguish the meanings of

to prevail *upon*...*over*,
to call *on*..........*for*,
a taste *of*..........*for*,
compared *with*.....*to*.

13 9. Write the Latin roots meaning place, ship, death, speak, change, and one or more English words derived from each.

Education Department, Ontario

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

(No. 22.)

ALGEBRA.

TIME—TWO HOURS.

Examiner—J. C. GLASHAN.

Values.

6 1. If $\pi = 3.1416$, $a = 5$ inches and $h = 7$ ft. 11 in., find the value of $2\pi(ah + a^2)$.

6 2. If $x = .4$ find, correct to one decimal place, the value of $x^8 - 4x^6 - 2x^4 - 52x^2 + 9$.

8 3. If $x = a + d$, $y = b + d$, $z = c + d$ prove that $x^2 + y^2 + z^2 - xy - yz - zx = a^2 + b^2 + c^2 - ab - bc - ca$.

8 4. Divide $a^3 + b^3 + c^3 - 3abc$ by $a + b + c$.

5. Find the factors of
6 (*a*) $15x^2 - 19xy - 10y^2$.
8 (*b*) $15(a+b)^2 + 14(a+b)(x+y) - 8(x+y)^2$.
6 (*c*) $x^3 - x^2y - xy^2 + y^3$.

6. Solve
6 (*a*) $(10x - 11)(11 + 2x) + (5x - 11)(11 + 3x) + (7x - 11)(11 - 5x) = 0$.
6 (*b*) $(x - 2n + 1)^2 - (2n - 1)^2 = (x - 2n)^2$.

6 7. What value of x will make $x^3 + 3cx^2 + 2c^2x + 5c^3$ equal to the cube of $x + c$?

10 8. If $a^2 + b^2 = c^2$ and $s = a + b + c$, prove that $(2s - a)^2 + (2s - b)^2 = (2s - c)^2$.

10 9. Having 75 minutes at my disposal, how far can I go in a carriage at $6\frac{2}{3}$ miles an hour, having to walk back at $3\frac{3}{4}$ miles an hour?

14 10. I row a miles down a stream in b minutes and return in c minutes; find the rate at which I row in still water and the rate at which the stream flows.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

ALGEBRA.

Answers.

1. 3141.6 (sq. in.)

2. .6+

4. $a^2+b^2+c^2-ab-bc-ca$.

5. (a). $(5x+2y)(3x-5y)$.
   (b). $\{3(a+b)+4(x+y)\}\{5(a+b)-2(x+y)\}$.
   (c.) $(x+y)(x-y)^2$.

6. (a). $1\frac{1}{2}$. (b). $2n^2$.

7. $4c$.

9. 3 miles.

10. $\frac{1}{2}\left(\frac{a}{b}+\frac{a}{c}\right)$; $\frac{1}{2}\left(\frac{a}{b}-\frac{a}{c}\right)$.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

THIRD CLASS TEACHERS.

(No. 23.)

EUCLID.

TIME—TWO HOURS.

Examiner—J. J. TILLEY.

Value—12½ *each*.

1. Define Problem, Square, Plane Rectilineal Angle, Direct Demonstration, Converse Proposition, Altitude of a Triangle, Perimeter.

2. Name, in order, the propositions referred to in Props. xvi. and xxix. Book I.

3. Give any other proof of Prop. xxxii. Book I. (Euclid).

4. In Prop. ii. Book I. draw the required line from any point in the given line.

5. To make a triangle of which the sides shall be equal to three given straight lines, but any two of these must be greater than the third.

6. The opposite sides and angles of a parallelogram are equal to one another and the diameter bisects it, that is, divides it into two equal parts.

7. To a given straight line to apply a parallelogram which shall be equal to a given triangle, and have one of its angles equal to a given rectilineal angle.

8. Equal triangles between the same parallels are upon equal bases.

Education Department, Ontario.

JULY EXAMINATION, 1880.

THIRD CLASS TEACHERS.

(No. 24.)

ENGLISH LITERATURE.

TIME—TWO HOURS AND A QUARTER.

Examiner—J. M. BUCHAN, M.A.

Values.

1. “To die, to sleep;
To sleep! perchance to dream;— ay, there's the rub;
For in that sleep of death what dreams may come
When we have shuffled off this mortal coil,
Must give us pause: there's the respect,
That makes calamity of so long life:
For who would bear the whips and scorns of time,
The oppressor's wrong, the proud man's contumely,
The pangs of despised love, the law's delay,
The insolence of office, and the spurns
That patient merit of the unworthy takes,
When he himself might his quietus make
With a bare bodkin? Who would fardels bear,
To grunt and sweat under a weary life,
But that the dread of something after death,
The undiscovered country from whose bourn
No traveller returns, puzzles the will;
And makes us rather bear those ills we have
Than fly to others that we know not of?
Thus conscience does make cowards of us all;
And thus the native hue of resolution
Is sicklied o'er with the pale cast of thought;
And enterprises of great pith and moment,
With this regard, their currents turn awry,
And lose the name of action.”

—*Fifth Reader, pp.* 488 *and* 489.

5 (i.) Write out in metrical form the part of this speech not given above.

1 (ii.) Who utters this soliloquy?

5 (iii.) Give in a few words the plot of the play in which it occurs.

[OVER.

Values.

3 (iv.) Explain the figure in 'coil', l. 4.

6 (v.) Explain the meaning of l. 6.

8 (vi.) What is the meaning of 'office' in l. 10, of 'bodkin' and 'fardels' in l. 13, and of bourn in l. 16?

2 (vii.) *Might his quietus make*, l. 12. Explain the meaning.

4 (viii.) Divide 'awry', l. 24, into syllables, and give its derivation.

6 (ix.) Explain the meaning of 'native, in l. 21, of 'cast' in l. 22, and of 'moment' in l. 23.

2 (x.) Parse 'with', l. 24.

5 (xi.) State in your own words the argument of the passage.

40 2. Write short notes on the life and works of Hume, Robertson, Lingard, and Macaulay.

3. "You are, indeed, a very considerable man. The highest rank, a splendid fortune, and a name glorious till it was yours, were sufficient to have supported you with meaner abilities than I think you possess. From the first you derived a constitutional claim to respect; from the second, a natural extensive authority; the last created a partial expectation of hereditary virtues."—*Fifth Reader, pp.* 418 *and* 419.

2 (i.) To whom did Junius address the letter in which these sentences occur?

6 (ii.) Explain the meaning in which 'constitutional' and 'partial' are used.

5 (iii. Explain fully the reference in 'hereditary virtues'.

10 (iv.) Tell what you know about the relations of George III. to his ministry and to parliament during the early part of his reign.

12 4. Give, after Trench, the history in 'crape', 'ermine', 'lumber', 'calculation', 'stipulation', and 'muslin'.

5. "Then it was that the common law rose to the dignity of a science, and rapidly became a not unworthy rival of the imperial jurisprudence. Then it was that the courage of those sailors who manned the rude barks of the Cinque Ports first made the flag of England terrible on the seas. Then it was that the most ancient colleges which still

Values.

exist at both the great national seats of learning were founded. Then was formed that language, less musical, indeed, than the languages of the south, but in force, in richness, in aptitude for all the highest purposes of the poet, the philosopher, and the orator, inferior to the tongue of Greece alone. Then, too, appeared the first dawn of that noble literature, the most splendid and the most durable of the many glories of England."—*Fifth Reader*, *p.* 141.

2 (i.) When, according to the writer, did these things happen ?

8 (ii.) What is meant by 'the common law' and by 'the imperial jurisprudence' ?

4 (iii.) Explain the sense in which the word 'science' is here used.

4 (iv.) Where are the Cinque Ports ? Name as many of them as you can.

2 (v.) Name 'both the great national seats of learning'.

2 (vi.) Name the most musical of those southern languages of which the writer is thinking.

4 (vii.) Explain the sense in which the word 'philosopher' is used here.

2 (viii.) Name any work written in English in the century referred to.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

(No. 25).

COMPOSITION.

TIME—ONE HOUR.

Examiner—GEO. W. ROSS.

Select one of the following subjects, and write at least two pages :—

1. The Great North West.
2. The Requisites of a National System of Education.
3. "What shadows we are and what shadows we pursue."
4. The Life of Napoleon.
5. "Sweet, sweet Home."

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

GEOGRAPHY.

TIME—TWO HOURS.

Examiner—JAMES HUGHES.

Values.

30 1. Sketch a map of Great Britain and Ireland, and mark on it 10 historical towns or battlefields; the chief 10 commercial cities; and 5 great manufacturing centres. Mark the positions on the map by numbers, and write the names opposite the proper numbers below the map. The numbers from 1 to 10 must be reserved for historic scenes; from 11 to 20 for commercial cities, &c.

15 2. Name the British possessions in Asia and Africa, and state the benefits which the mother country derives from them.

45 3. Give in tabular form the names of the countries of Europe, their religions, forms of government, chief productions, and the population of each.

10 4. Sketch an outline of the Dominion of Canada, and mark on it the chief districts in which minerals have been found, naming the minerals at the proper place on the map.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

(No. 28.)

EUCLID.

TIME—THREE HOURS.

Examiner—J. J. TILLEY.

1. Two triangles are equal in every respect:—
   - (i.) If they have two angles of the one equal to two angles of the other, and the side opposite one of these angles in the one triangle equal to the side opposite to the equal angle in the other.
   - (ii.) If they have two sides of the one equal to two sides of the other, and the angle opposite one of these sides in the one triangle equal to the angle opposite to the equal side in the other triangle, the angles opposite to the other equal sides being each less than a right angle.

2. If a straight line be bisected and produced to any point, the square on the whole line thus produced and the square on the part produced are together equal to twice the square on half the line bisected, together with twice the square on the line made up of the half and the part produced.

3. If through a fixed point within a circle a chord be drawn, the rectangle contained by its two segments is always the same in whatever direction the chord is drawn.

4. Equal triangles which have an angle of the one equal to an angle of the other have their sides about the equal angles reciprocally proportional and conversely.

5. To describe a rectilineal figure which shall be similar to one given rectilineal figure and equal to another rectilineal figure.

6. To construct a rectangle that shall be equal to a given square, and the difference of whose adjacent sides shall be equal to a given line.

[OVER.

7. To find a point within a triangle from which, if straight lines be drawn to the angles, they will divide the area of the triangle into three equal parts.

8. Given any triangle to make a similar one of double the area.

9. The rectangle contained by the diagonals of a quadrilateral figure inscribed in a circle is equal to the sum of the rectangles contained by its opposite sides.

10. If the perpendiculars Am, Bn, Cd, be drawn from the angular points of a triangle ABC upon the sides, shew that they will bisect the angles of the triangle mnd.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

ELEMENTARY MECHANICS.

TIME—THREE HOURS.

Examiner—J. C. GLASHAN.

N.B.—*Five questions will be considered a complete paper.*

1. State the conditions of equilibrium of any number of forces acting in one plane at different points of a rigid body.

Three forces, the first acting at the point A, the second at the point B, the third at the point C, are represented in magnitude and direction by the lines AB, BC, CA. Determine the resultant.

2. Define uniform velocity, and uniformly accelerated velocity. How is a variable velocity measured? State the law of the composition of velocities.

Particles P and Q, starting simultaneously from O, move in the straight lines OA, OB, which are at right angles to one another, P moving with a uniform velocity of 24 ft. per second and Q with a uniform velocity of 7 ft. per second. Determine in magnitude and direction the velocity of Q with respect to P.

3. Define energy, and explain the relations between force, momentum and energy.

A body weighing 12 lbs. slides with uniform velocity down a plane that rises 5 in 13. How much energy would have to be expended in order to drag the body 13 ft. up the plane by means of a string stretched parallel to the plane.

4 A body moves under the action of a constant force, prove (i.) that its velocity will be uniformly accelerated, (ii.) that the spaces described from rest will vary as the squares of the times of describing them.

A constant force causes a mass of 10 ounces to move from rest through 64 ft. in 10 seconds. Compare the force with the weight of a mass of 16 oz. ($g=32$).

[OVER.

5. State the laws of fluid pressure.

A hollow cylinder closed at both ends is filled with water and held with its axis horizontal: if the whole pressure on its surface, including the plane ends, be three times the weight of the water, compare the height and diameter of the cylinder.

6. State the law of connection of the density, pressure, and temperature of a perfect gas.

A pipe 15 ft. long, closed at the upper extremity, is placed vertically in a tank of the same height; the tank is then filled with water; if the height of the water-barometer be 33 ft. 9 in., determine how high the water will rise in the pipe.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

(No. 36.)

HISTORY.

TIME—THREE HOURS.

Examiner—S. ARTHUR MARLING, M.A.

1. "The reign of William III. was the nadir of the national prosperity."—*(Hallam)*. "It was also the nadir of the national character."—*(Macaulay)*. Explain in detail what is meant, and justify these statements.

2. Describe the financial measures of Montague. (Will. III).

3. Under what circumstances was the Act of Settlement passed? State and explain briefly its provisions. Distinguish the chief attempts made during the half-century after its passing to disturb the succession.

4. Sketch the history of England under Sir R. Walpole's administration with reference to these points:—

   a. Domestic politics.
   b. Foreign policy.
   c. The Parliament.

5. What do you understand by responsible government? What was Sunderland's scheme of government? Explain clearly the relations between the Sovereign, the Privy Council, the chief ministers of the Crown, and the Parliament, with regard to ministerial responsibility, under William, Anne, and the first three Georges.

6. Write short historical explanatory notes on Attainder, Partition, Treaties, Non-jurors, Occasional Conformity, the Law of Treason.

7. In what does the 'liberty of the press' consist? Give an account of the gradual emancipation of the press. What is Hallam's estimate of the function of the press in the national government?

[OVER.

8. Explain historically, with dates where necessary, the expressions—

- *a.* The first United Parliament of Great Britain.
- *b.* The Capitulation of Limerick.
- *c.* The Kentish Petition.
- *d.* The Holy Alliance

9. State the geographical position of these places, and the historical events with which they are severally associated:—Fontenoy, Rossbach, Minden, Campo Formio, Austerlitz, Yorktown.

10. "From the moment of the Declaration of Independence it mattered little whether England counted for less or more with the nations around her."—(*Green.*) Explain what is meant.

11. Give an account of the Aylesbury Election case in Queen Anne's reign, and of the Wilkes case under George III. State the principles involved in each, and the results.

12. Mention the principal steps by which British supremacy has been established in India.

13. Describe concisely the political and social condition of Ireland under the Georges.

14. Tell what you know of the peace of Amiens in 1802, and of its rupture.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

ARITHMETIC.

TIME—THREE HOURS.

Examiner.—J. A. McLELLAN, LL.D.

1. Prove the rule for multiplying one fraction by another, and deduce that for dividing one fraction by another.

Prove

$$\frac{\underline{|48}}{\underline{|13}\times\underline{|35}}+3\cdot\frac{\underline{|48}}{\underline{|12}\times\underline{|36}}+3\cdot\frac{\underline{|48}}{\underline{|11}\times\underline{|37}}+\frac{\underline{|48}}{\underline{|10}\times\underline{|38}}=\frac{\underline{|51}}{\underline{|13}\times\underline{|38}}.$$

2. Shew, without algebra, the reasons of the rules for pointing in multiplication and division of decimals.

Reduce to a decimal of four places : $\frac{1}{2^2}+\frac{2}{2^3}+\frac{3}{2^4}+\frac{4}{2^5}+\frac{5}{2^6}+\frac{6}{2^7}+\frac{7}{2^8}+\frac{8}{2^9}$.

3. A rectangular piece of ground contains 9 acres 1 rood $16\frac{1}{3}$ poles; its length is to its breadth as 3 to 1: find (1) the distance round it, (2) the distance from one corner to the opposite corner.

4. Investigate a rule for finding the amount of an annuity at compound interest for a term of years.

I borrowed $2000 for four years at 10 % compound interest, to be paid in four equal annual payments. Find the annual payment.

5. A piece of glass whose specific gravity is 2.4, and whose weight is $4\frac{1}{2}$ lbs., is found to weigh only $2\frac{1}{4}$ lbs. when weighed in a certain liquid. Find the s.g. of the liquid.

6. Shew how to find the true discount for a given time and rate.

[OVER.

I bought a bill of goods amounting to $1040, for which I gave my note payable in six months without interest, and immediately sold the goods for $1200 on such a term of credit as made my gain $17\frac{1}{2}\%$, reckoning money worth 8%. Find the term of credit.

7. Prove that the area of a circle $= \pi r^2$, or $=$ radius $\times \frac{1}{2}$ circumference.

What is the proportionate error in the following rough rule for finding the area of a circle :—Take $\frac{7}{9}$ of the square on the diameter, and add one per cent.

8. A cistern is kept constantly supplied with water; supposing it full, it is found that 24 equal taps opened together will empty it in $5\frac{1}{2}$ minutes, and 15 of them will empty it in 13 minutes. How many of them will empty it in 33 minutes ?

9. State the rule for finding the characteristic of the logarithm for any number.

Find the number of digits in the integral part of $3^{20} \times 5^{15} \div 2^{11}$, and the number of ciphers between the decimal point and the first significant figure of the decimal representing 3^{-15}.

10. (1). The base of a triangle is b, and its altitude a, required the distance from the vertex at which a parallel to the base must cut the altitude in order to bisect the triangle.

(2). The perimeter of a right angled triangle is p, and the radius of the inscribed circle is r: determine the sides of the triangle.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS - GRADE C.

(No. 41.)

ENGLISH LITERATURE.

TIME—TWO HOURS AND A HALF.

Examiner—J. M. BUCHAN, M.A.

Values.

JULIUS CÆSAR.

50 1. Describe the character of Brutus, quoting the words of the play, wherever you can, in illustration of the different features of his character. How does the Brutus of the play differ from the Brutus of history?

2. "If you have tears, prepare to shed them now.
You all do know this mantle: I remember
The first time ever Cæsar put it on;
'Twas on a summer's evening in his tent,
That day he overcame the Nervii:
Look, in this place ran Cassius' dagger through:
See what a rent the envious Casca made:
Through this the well-beloved Brutus stabb'd;
And as he pluck'd his cursed steel away,
Mark how the blood of Cæsar follow'd it,
As rushing out of doors to be resolv'd
If Brutus so unkindly knock'd or no;
For Brutus, as you know, was Cæsar's angel:
Judge, O you gods, how dearly Cæsar loved him!
This was the most unkindest cut of all;
For when the noble Cæsar saw him stab,
Ingratitude, more strong than traitors' arms,
Quite vanquish'd him: then burst his mighty heart;
And, in his mantle muffling up his face,
Even at the base of Pompey's statuë,
Which all the while ran blood, great Cæsar fell.
—*Act III., Scene* 2, *ll.* 167-187.

2 (i.) What character utters this speech?

[OVER.

Values.

20 (ii.) Write brief historical notes on the Nervii, Casca, Cassius, and Pompey.

12 (iii.) Explain the meaning of 'resolv'd', l. 177, and 'angel', l. 179.

4 (iv.) Scan ll. 168 and 186.

4 (v.) Parse 'day', l. 171.

10 (vi.) Quote five consecutive lines from any other part of this speech.

20 3. By whom, and under what circumstances, are the following passages uttered?

> "You know that I held Epicurus strong
> And his opinion: now I change my mind
> And partly credit things that do presage."
>
> "There is a tide in the affairs of men,
> Which taken at the flood, leads on to fortune;
> Omitted, all the voyage of their life
> Is bound in shallows and in miseries."
>
> "Cowards die many times before their deaths;
> The valiant never taste of death but once."
>
> "He had a fever when he was in Spain,
> And when the fit was on him, I did mark
> How he did shake: 'tis true, this god did shake;
> His coward lips did from their colour fly,
> And that same eye whose bend doth awe the world
> Did lose his lustre."

6 (i.) What was the 'opinion' of Epicurus?

6 (ii.) Explain the meaning of 'bound' (2nd passage).

6 (iii.) *His coward lips, etc.* Explain the figure.

THE SPECTATOR.

4. Give an account of the part which Addison took in politics.

5. "My friend, Sir Roger de Coverley, when we last met together at the club, told me that he had a great mind to see the new tragedy with me, assuring me at the same time, that he had not been at a play these twenty years. 'The last I saw,' said Sir Roger, 'was *The Committee*, which I should not have gone to neither, had not I been

told beforehand that it was a good Church of England comedy.' He then proceeded to inquire of me who this *Distressed Mother* was; and upon hearing that she was Hector's widow, he told me that her husband was a brave man, and that when he was a school-boy he had read his life at the end of the dictionary. My friend asked me, in the next place, if there would not be some danger in coming home late, in case the Mohocks should be abroad."

—*The Spectator*, *No.* 335.

20 (i.) Write notes on *The Committee*, *The Distressed Mother*, Hector, and the Mohocks.

6 (ii.) Explain what is meant by 'a good Church of England comedy.'

GRAY'S ELEGY.

12 6. "Nor you, ye Proud, impute to these the fault,
If Memory o'er their tomb no trophies raise,
Where, thro' the long-drawn aisle and fretted vault,
The pealing anthem swells the note of praise."

—*Ll.* 37-40.

What parts of a church are here called the 'aisle' and the 'vault'?

GOLDSMITH'S TRAVELLER.

6 7. "Yet oft a sigh prevails, and sorrows fall,
To see the hoard of human bliss so small."

—*Ll.* 57 *and* 58.

Explain the meaning of 'sorrows'.

JOHNSON AND MACAULAY.

66 8. Compare Addison, Johnson and Macaulay as to their prose, their poetry, their conversational powers, their political views, and their scholarship.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

(No. 32.)

ENGLISH GRAMMAR AND ETYMOLOGY.

TIME—THREE HOURS.

Examiner—S. ARTHUR MARLING, M.A.

Ham.—
How all occasions do inform against me,
And spur my dull revenge! What is man
If his chief good, and market of his time,
Be but to *sleep*, and feed? a beast, *no more*.
Sure, He that made us with such large discourse,
Looking before and after, gave us not
That capability and godlike reason,
To fust in us *unused*. Now, whether *it* be
Bestial oblivion, or some craven scruple
Of thinking too precisely on the event,
A thought, which, *quartered*, hath but one part wisdom,
And ever three parts *coward*, I do not know
Why yet I live to say, "This thing's to do";
Sith I have cause, and will, and strength, and means,
To do 't. Examples, gross as earth, exhort me:
Witness this army, of such mass and charge,
Led by a delicate and tender prince;
Whose spirit, with divine ambition puffed,
Makes mouths at the invisible event;
Exposing what is mortal, and unsure,
To all that fortune, death, and danger, dare,
Even for an egg-shell. Rightly to be great
Is not to stir without great argument,
But greatly to find quarrel in a straw,
When honour's at the stake. How stand I, then,
That have a father *killed*, a mother stained,
Excitements of my reason and my blood,
And *let* all sleep? while, to my shame, I see
The imminent death of twenty thousand men,
That, for a fantasy and trick of fame,

[OVER.

Go to their graves *like* beds; fight for a plot
Whereon the numbers cannot try the cause;
Which is not tomb enough, and continent,
To hide the slain? O, from this time forth
My thoughts *be* bloody, or be nothing worth!
—SHAKSPEARE; *Hamlet, Act iv. Sc. 4*

1. Parse the sixteen words in italics.

2. Write short explanatory notes on 'market' (l. 3), 'argument' (l. 23), 'continent' (l. 34).

3. What examples, in the passage, of the gerundial infinitive?

4. Paraphrase l. 19, ll. 29-33, bringing out the meaning fully.

5. Derive 'revenge' (l. 2), 'craven', 'scruple' (l. 9), 'fantasy' (l. 30), 'continent' (l. 33), 'coward' (l. 12).

6. (l. 23) 'To stir'; is this subject or predicate? Give your reason.

7. Point out, name, and show the force of the figures of speech found in the extract.

8. Divide the first fifteen lines into propositions; state their kind and relation; and analyze such of them as are dependent.

9. Illustrate from the passage the various senses in which the propositions *with*, *for* and *to* are used.

10. What peculiarities of metre do you observe in the extract? Comment briefly upon them.

11. What part of speech is 'even' (l. 22)? 'enough' (l. 33)? Justify your answer.

12. *Sith.* What modern English derivative from this, and how formed?

13. What different meanings are borne by these words—*worth then*, *event*, *stake*, *cause*, and how do they get these different meanings?

14. Notice and explain grammatical peculiarities in the following:—

(*a*) 'I am his first-born son that was the last
That wore the imperial diadem of Rome'.

(*b*) 'There was therefore, which is all that we assert, a course of life pursued by them different from that which they before led'.

(c) 'Villain, knock me at this gate,
And rap me well'.

(d) 'Whom he would he slew, and whom he would he kept alive'.

(e) 'If I open my eyes on the light, I cannot choose but see'.

15. Correct what is wrong in these sentences, giving your reasons:—

'Two or more singular nouns, coupled with *and*, require a verb in the plural'.

'There's ne'er a villain dwelling in all Denmark
But he 's an arrant knave'.

'Early to bed and early to rise
Make a man healthy, wealthy and wise'.

'Who riseth from a feast
With that keen appetite that he sits down ?'

'Some were insensible and some were invincible against the assaults of the flesh'.

'The ambassador brought them the draught of an article, and asked them whether it were satisfactory'.

16. Give some account of the origin of the verbs 'shall', 'can', 'ought'.

17. Explain the derivation of ancestor, ephemeral, cenotaph, hurricane, sovereign, animalcule, decision, prelate, thraldom, distemper, morose, assassin.

18. Write a short note on the defects and redundancies of the English alphabet.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

(No. 37.)

CHEMISTRY.

TIME—TWO HOURS.

Examiner.—J. A. McLELLAN, LL.D.

1. State the difference between combining weights and volume weights.

Explain the equation
$H_2SO_4 + 2KHO = K_2SO_4 + 2H_20$, and write out the combining numbers for each element.

2. Deduce the formula for converting degrees on Fahrenheit's scale to corresponding degrees on the Centigrade scale.

Convert 84° C. into F., and 40°C. into F., —30° F. into C.

3. State and explain the laws relating to the variation in the volume of a gas for variation in pressure, or temperature.

100 volumes of air under a barometric pressure of 740 mm. become how many volumes under a pressure of 750 mm.?

A quantity of air at 0° measures 100 c.c., what will be its volume at 18°.5 ?

4. How is carbonic acid prepared? Give and explain the equations representing the re-actions. Describe fully what takes place when a stream of carbonic acid is passed into lime-water to saturation; also, what occurs when the liquid so produced is boiled. How would you prove that carbonic acid really consists of carbon and oxygen in the proportion stated in the formula?

5. What are the principal ores of tin, iron, lead, copper, and zinc? Describe the process of smelting any one of them.

6. Give the formulæ for the two carbonates of sodium, and explain how the one may be converted into the other.

How much neutral carbonate will one pound of the bicarbonate produce ?

[OVER.

7. Describe the general characters of an alkali. Explain the action of soda with hydrochloric acid, sulphuric acid, zinc sulphate, and stearine.

8. What is meant by *graphic, simple, and constitutional* formulæ? Give illustrations.

Give the Graphic formulæ of phosphoric chloride, and sulphuric acid; also give the formulæ, simple and constitutional, of common salt, lead peroxide, iron peroxide, and silver phosphate.

9. Give an example of a monobasic, a dibasic, and a tribasic acid. What is the nature of the decomposition which takes place when a solution of silver nitrate is added to one of common sodium phosphate?

10. Calculate the most probable formula for a substance—containing no other elements than C, O, and H—of which ·243 grain yielded, on combustion, ·693 grain of carbon dioxide, and ·162 grain of water.

Education Department, Ontario

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

(No. 38.)

ALGEBRA.

TIME—THREE HOURS.

Examiner—J. C. GLASHAN.

1. If in $ax^2+2bxy+cy^2$, $ku+lv$ be substituted for x and $mu+nv$ for y, the result takes the form $Au^2+2Buv+Cv^2$. Find the value of $(B^2-AC)\div(b^2-ac)$ in terms of k, l, m, n.

2. Resolve $a(b-c)^3+b(c-a)^3+c(a-b)^3$ into factors.

Prove that $\dfrac{Au^3+Bv^3+Cw^3}{uvw}=\dfrac{Ax^3+By^3+Cz^3}{xyz}$

if $u=x(By^3-Cz^3)$, $v=y(Cz^3-Ax^3)$, $w=z(Ax^3-By^3)$.

3. Extract the square root of

$$(a-b)^2(b-c)^2+(b-c)^2(c-a)^2+(c-a)^2(b-c)^2,$$

and the cube root of

$$4\{(a-b)^6+(b-c)^6+(c-a)^6-3(a-b)^2(b-c)^2(c-a)^2\}.$$

4. Eliminate x, y, z from

$$ax+by+cz=1 \qquad \frac{a}{x}=\frac{b}{y}=\frac{c}{z}$$

$$k(x^2+y^2+z^2)+2(lx+my+nz)+h=0.$$

5. Simplify $\dfrac{a\sqrt{b}+b\sqrt{a}}{\sqrt{a}+\sqrt{b}}$,

$$\{\sqrt{(4+3j)}+\sqrt{(4-3j)}\}^2,$$

and $\left(\dfrac{-1+j\sqrt{3}}{2}\right)^2+\dfrac{-1+j\sqrt{3}}{2}+1$

in which $j=\sqrt{(-1)}$.

6. Given the first term, the common difference and the number of terms of an arithmetical progression, find (i.) the sum of the terms, (ii.) the sum of the squares of the terms.

[OVER.

7. Solve the equations

(i.) $(a-x)^3=(x-b)^3$

(ii.) $ax+by=\frac{a}{x}+\frac{b}{y}=1$

(iii.) $x(y+z^{-1})=a,\ y(z+x^{-1})=b,\ z(x+y^{-1})=c.$

8. What value (other than 1) must be given to q that one of the roots of $x^2-2x+q=0$, may be the square of the other.

If a, b, c are the roots of x^3-px^2+qx-r, express

$$\frac{2a^2b^2+2b^2c^2+2c^2a^2-a^4-b^4-c^4}{2ab+2bc+2ca-a^2-b^2-c^2}$$

in terms of p, q and r.

9. A vessel makes two runs on a measured mile, one with the tide in m minutes and one against the tide in n minutes. Find the speed of the vessel through the water, and the rate the tide was running at, assuming both to be uniform.

10. Five points, A, B, C, O and P, lie on a right line. The distances of A, B, and C, measured from the point O, are a, b, and c; their distances measured from the point P are x, y, z. Prove that whatever be the positions of the points O and P,

$$x^2(b-c)+y^2(c-a)+z^2(a-b)+(b-c)(c-a)(a-b)=0.$$

Education Department, Ontario.

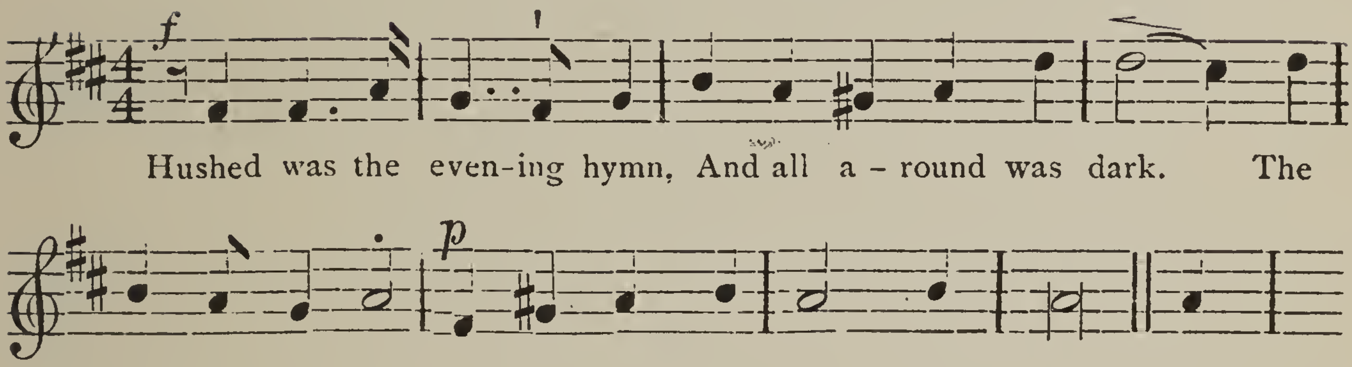
JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADE C.

MUSIC.

TIME—ONE HOUR AND A QUARTER.

Examiner—JAMES HUGHES.


f
Hushed was the even-ing hymn, And all a - round was dark. The
p

Values.

50 1. *(a)* In what key is the above written?
   (b) How many beats must be given in each measure?
   (c) Of what value is each beat?
   (d) Name the notes both according to pitch and duration?
   (e) How would you find the exact sound of the first note in the piece with a C fork?
   (f) Name all the marks in the piece, except the notes, and state their use.
   (g) Which measures are incorrectly printed?
   (h) State how the errors may be corrected.

12 2. Construct the scales of si flat and fa.

18 3. Define Major and Minor Diatonic Scales, Solfeggio, Transposition, Unison, and Interval.

15 4. How do you propose to teach music in your schools? Answer fully.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADES A AND B.

ANCIENT HISTORY AND GEOGRAPHY.

TIME—TWO HOURS AND A HALF.

Examiner—J. M. BUCHAN, M.A.

1. Describe the condition of the original Indo-European race, as far as it has been ascertained.

2. Sketch the invasion of Greece by Xerxes.

3. Explain fully in what the greatness of Athens consisted in the age of Pericles.

4. Write a geographical account of the races of Italy at the time of their union under the leadership of Rome.

5. Explain, according to Mommsen, the causes of the break-up of the Roman republic.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—Grades A and B.

ENGLISH AND CANADIAN HISTORY.

Time—Two Hours and a Half.

Examiner— S. Arthur Marling, M.A.
J. M. Buchan, M.A.

1. Give an account of the growth of the power of the House of Commons during the reign of Elizabeth.

2. Write, after Green, an account of the Puritan movement from its origin to the fall of Laud.

3. Sketch, after Macaulay, the state of England at the accession of James II.

4. Write an account of the establishment of feudalism in Canada. Explain the meaning of *lods et ventes*, *roturiers*, *grant en censive.*

5. Show how the regulations of the government affected Canadian trade and commerce during the French period.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADES A AND B.

ANALYTICAL GEOMETRY.

TIME—TWO HOURS AND A HALF.

Examiner—J. C. GLASHAN.

1. Determine the area of a triangle in terms of the coördinates of its angular points; axes oblique.

Find the area of the triangle

$(x-a)(y-b)(ax+by-c^2)=0$, axes rectangular.

2. To find the equation of a straight line passing through two given points.

Determine the equation of the straight line passing through the intersection of

$Ax+By+C=0$, and $A'x+B'y+C'=0$,

and also through the intersection of

$ax+by+c=0$, and $a'x+b'y+c'=0$.

3. Obtain the substitution formulæ for transforming from oblique coördinates to polar coördinates, with the pole at $(x_1 y_1)$ and the initial line at an angle a to the axis of x.

By the substitutions $x = \mp ae - r\cos\theta$, $y = r\sin\theta$,

$$\frac{x^2}{a^2} \pm \frac{y^2}{b^2} = 1$$

becomes

$$\left(r - \frac{l}{1+e\cos\theta}\right)\left(r + \frac{l}{1-e\cos\theta}\right) = 0$$

in which e is the eccentricity and $2l$ the *latus rectum* of the conic.

4. Determine the equation of the tangent at a given point of a circle.

Deduce the equation of the chord of contact of tangents from $(h\ k)$ to the circle.

Determine the conditions that the circles

$$(x-a)^2+(y-b)^2=c^2$$
$$(x-a')^2+(y-b')^2=c'^2$$

shall have one, and only one, common tangent.

[OVER.

5. The coördinates of the extremity of any diameter being given, find those of the extremity of the diameter conjugate to it.

Determine the tangent of the angle between a pair of conjugate diameters, one of which passes through the point $(a_1 b_1)$ on the conic.

6. Determine the equations of the tangents at the point θ, of the ellipse

$$x = a \, cos \, \varphi, \; y = b \, sin \, \varphi.$$

Tangents are drawn to an ellipse at P and P', and from the centre O, lines OQ, and OQ' parallel to either tangent and meeting the other in Q and Q' respectively; prove that the triangle contained by the semi-axes is a mean proportional between the triangles POP' and QOQ'.

7. Determine the asymptotes of the conic

$$(x-a)^2 - (y-b)^2 = c^2.$$

If a circle has its centre on a conic and passes through a focus, prove that the diameters of the circle through its points of intersection with the directrix of the focus are parallel to the asymptotes of the conic.

8. The equation of the parabola referred to two tangents as axes of coördinates is

$$\left(\frac{x}{a}\right)^{\frac{1}{2}} + \left(\frac{y}{b}\right)^{\frac{1}{2}} + 1^{\frac{1}{2}} = 0,$$

a and b being the lengths of the tangents from their intersection to their points of contact, and the signs of the radicals being either positive or negative and independent of each other.

9. L, M, N, and P being linear in x and y, interpret

$$LM + kNP = 0;$$
$$LM + kN^2 = 0;$$
$$l^2 L^2 - m^2 M^2 - n^2 N^2 = 0.$$

The three pairs of opposite sides of a hexagon inscribed in a conic intersect in points which all lie in one straight line.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADES A AND B.

ELEMENTARY GEOMETRICAL OPTICS.

TIME—TWO HOURS.

Examiner—J. C. GLASHAN.

1. State the laws of the reflection and the refraction of a ray of light at a surface.

Two plane vertical mirrors intersect at right angles. What will be the appearance to a person looking into the angle formed by them, supposing no light to be reflected at the line of junction? What changes will take place if one of the mirrors be slowly rotated about the line of junction?

A solid cube of glass is placed with one face on a horizontal sheet of paper. What will be the appearance to a person looking obliquely downwards through one of the vertical faces?

2. Determine the position of the geometrical focus of a pencil directly reflected at a concave spherical surface.

Two concave spherical reflectors are placed with their axes coincident and their concavities facing each other at a distance from one another equal to half the sum of their radii; a bright point is placed between them on the axis. Prove that if any of the successive images coincide with the point, this must be within the radius of the smaller sphere and the first reflection must be taken off it.

3. Determine the position of the geometrical focus of a pencil of rays after direct refraction at a spherical refracting surface.

Find the geometrical focus of a pencil of rays refracted through a hollow glass globe of 2 inches external and $\frac{1}{2}$ inch internal radius. (Index of refraction for glass$=\frac{3}{2}$).

4. Show how to find the focal length of a system of lenses of known focal lengths, whose axes are coincident and which are separated by given intervals.

(OVER.

Four convex lenses of focal lengths, 7, 11, 11 and 7 respectively, are placed on the same axis at intervals of 18, 99, and 18 respectively. Determine their effect on a ray of light emanating from a point on the axis and passing through all four lenses.

5. Describe the eye as an optical instrument. Trace to the retina a pencil of parallel rays entering (i.) an ordinary eye, (ii.) a short-sighted eye.

An eye is placed close to a sphere of glass, a portion of the surface of which, most remote from the eye, is silvered: prove that the eye cannot see a distinct image of itself unless the radius of the sphere be at least five-eighths of the distance of distinct vision. (Index of refraction from air to glass $= \frac{3}{2}$).

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADES A AND B.

ENGLISH LANGUAGE AND HISTORY OF ENGLISH LITERATURE.

TIME—TWO HOURS AND A HALF.

Examiners— { J. M. BUCHAN, M.A.
S. ARTHUR MARLING, M.A.

LANGUAGE.

1. State and explain Grimm's law of consonantal transition.

2. What is the meaning of the terms Ablaut, Umlaut, Symphytism.

3. Give an account of the nature and amount of the effects produced on our language by the influence of the French.

4. Explain the basis of the classification of words as symbolic and presentive. Which words are symbolic and which presentive in the following lines?

> "For forms of government let fools contest;
> Whate'er is best administered is best."

5. Quote an example of a sonnet, a Spenserian stanza, and an iambic tetrameter.

HISTORY OF ENGLISH LITERATURE.

1. Shew in what ways the political events of the reign of Edward III. fostered the growth of literature.

2. Why is prose subsequent to verse in the natural order of the development of a literature? Give an account of the progress of English prose writing from Chaucer to Ascham.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS— GRADES A AND B.

ALGEBRA.

TIME—TWO HOURS AND A HALF.

Examiner—J. A. MCLELLAN, LL.D.

1. If any positive integral function of x of the *nth* degree vanish for more than n different values of x, it vanishes identically, the co-efficient of every term being zero.

If $x^4 + px + q$ be divisible by $x^2 + ax + b$, then will $(a^3 + p)(a^3 - p) = 4a^2q$, and $(b^2 + q)(b^2 - q)^2 = p^2b^3$.

2. Investigate the general term in the expansion of $(a + b + c + d + \&c.)^n$.

Find the co-efficient of x^6 in the expansion of $1 - 3x + 4x^2 - 2x^3)^5$.

3. If $x = a_1y + a_2y^2 + a_3y^3 + \&c.$, find a series for y in terms of x.

Revert the series $y = x - \frac{1}{3}x^3 + \frac{1}{5}x^5 - \frac{1}{7}x^7 + \&c.$

4. Find the scale of relation of the series $2 + 2x - 4x^2 - 22x^3 - 46x^4 - \&c.$, and the sum, to infinity, of the series $8 - 29x + 257x^2 - 1691x^3 + 12053x^4 - \&c.$

5. The series for $\log_e(1+x)$, in ascending powers of x is $x - \frac{1}{2}x^2 + \frac{1}{3}x^3 + \&c.$

Prove
$$\log x = \tfrac{1}{2}\left\{\frac{x^2-1}{x^2+1} + \tfrac{1}{2}\cdot\frac{x^4-1}{(x^2+1)^2} + \tfrac{1}{3}\cdot\frac{x^6-1}{(x^2+1)^3} + \tfrac{1}{4}\cdot\frac{x^8-1}{(x^2+1)^4} + \&c.\right\}$$

6. If $\frac{p_n}{q_n}$ denote the *nth* convergent to a continued fraction, then $p_n = a_np_{n-1} + p_{n-2}$, $q_n = a_nq_{n-1} + q_{n-2}$.

Shew that $\frac{p_n}{q_n} = \frac{p_{n+1} - p_{n-1}}{q_{n+1} - q_{n-1}}$.

[OVER.

7. Investigate the independent necessary conditions for the co-existence of the four equations

$$ax + by + cz = 0, \quad \frac{b'z + c'y}{a} = \frac{c'x + a'z}{b} = \frac{a'y + b'x}{c} = x + y + z.$$

Prove that these conditions are equivalent to the two equations

$$(aa')^{\frac{1}{2}} + (bb')^{\frac{1}{2}} + (cc')^{\frac{1}{2}} = 0,$$

$$\left(\frac{a'}{a}\right)^{\frac{1}{2}} + \left(\frac{b'}{b}\right)^{\frac{1}{2}} + \left(\frac{c'}{c}\right)^{\frac{1}{2}} = \left(\frac{a'b'c'}{abc}\right)^{\frac{1}{2}}.$$

8. A number whose radix is r is divisible by $r+1$ when the difference between the sum of the digits in the odd places and the sum of the digits in the even places is divisible by $r+1$.

If $f(n)$ represent the remainder after dividing a number n by $r - 1$, shew that

$$f\{f(p).f(q)\} = f(pq).$$

9. (1) If $\sigma = ab + bc + ca$ prove $(\sigma + a^2)(\sigma + b^2)(\sigma + c^2) =$
$(a + b)^2(b + c)^2(c + a)^2$.

(2) If
$$x(x-1)^2 + y(y-1)^2 + z(z-1)^2 - yz(x+1)^2 - zx(y+1)^2 - xy(z+1)^2$$
$+ 4xyz = 0$, and $x + y + z > 1$, prove that
$$(x + 1)(y + 1)(z + 1) = x^2 + y^2 + z^2 + 1.$$

10. State some of the principal propositions which are of use in the reduction of determinants.

Resolve into factors

$$\begin{vmatrix} 0 & x & y & z \\ x & 0 & z & y \\ y & z & 0 & x \\ z & x & y & 0 \end{vmatrix},$$

and prove that if $a^2 + c^2 - 2bd = 1$ and $b^2 + d^2 - 2ac = 0$, then will

$$\begin{vmatrix} a & b & c & d \\ d & a & b & c \\ c & d & a & b \\ b & c & d & a \end{vmatrix} = 1.$$

11. Solve the equations—

(1) $$\frac{(a-x)^{\frac{1}{2}} + c^{\frac{1}{2}}}{(a - x)^{\frac{1}{4}}} = \frac{(x-b)^{\frac{1}{2}} + c^{\frac{1}{2}}}{(x - b)^{\frac{1}{4}}}$$

(2) $$\frac{a(x + a - b)}{b(x - a + b)} = \left(\frac{x + 7a - b}{x - a + 7b}\right)^2.$$

(3) $x^5 + y^5 = a(x^3 + y^3)$, $xy = b$.

(4) $$\frac{x^2 + y^2}{x + y} = \frac{a^2 + b^2}{a + b}, \quad \frac{x^4 + y^4}{x^3 + y^3} = \frac{a^4 + b^4}{a^3 + b^3}.$$

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADES A AND B.

PROBLEMS.

TIME—THREE HOURS.

Examiners— { J. A. McLELLAN, LL.D.
J. C. GLASHAN.

1. Find the factors of

$$(a^3+b^3+c^3)xyz+(a^2b+b^2c+c^2a)(x^2y+y^2z+z^2x)$$
$$+(ab^2+bc^2+ca^2)(xy^2+yz^2+zx^2)+(x^3+y^3+z^3)abc$$
$$+3abcxyz.$$

Prove that the expression

$$(xyz+x^2y-y^2z+z^2x)^2+(xyz+xy^2+yz^2-zx^2)^2$$

is unaltered in value by any interchange of the letters x, y, z.

2. If $$a^2x^2+b^2y^2+c^2z^2=0$$
$$a^2x^3+b^2y^3+c^2z^3=0$$

and $$x^{-1}-a^2=y^{-1}-b^2=z^{-1}-c^2$$

prove that $$a^4x^3+b^4y^3+c^4z^3=0.$$

If $ax+by=1$ and $c^2x^2+d^2y^2=1$ have only one solution, prove that $$\frac{a^2}{c^2}+\frac{b^2}{d^2}=1.$$

3. Solve the equations

(i.) $$\frac{x-a}{b}+\frac{x-b}{a}=\frac{b}{x-a}+\frac{a}{x-b}.$$

(ii.) $$(x+a)(x+a+b)(x+a+2b)(x+a+3b)=c.$$

(iii.) $$x^2+y=x+y^2=axy.$$

4. Prove that $$\begin{vmatrix} 1 & 1 & 1 & 1 \\ a & b & c & d \\ a^2 & b^2 & c^2 & d^2 \\ a^3 & b^3 & c^3 & d^3 \end{vmatrix}=$$
$$(a-b)(a-c)(a-d)(b-c)(b-d)(c-d).$$

[OVER.

Find the factors of

$$\begin{vmatrix} 1 & 1 & 1 & 1 \\ a & b & c & d \\ a^2 & b^2 & c^2 & d^2 \\ a^4 & b^4 & c^4 & d^4 \end{vmatrix}$$

5. If $\frac{x^5+1}{x+1}=0$, find the value of

$$(7+x+x^2+3x^3)(7-\overset{-1}{x}-\overset{-2}{x}-3\overset{-3}{x}).$$

6. Prove that, if n be an integer, $\cos(4n+1)\theta+\sin(4n+1)\theta$ is divisible by $\cos\theta+\sin\theta$ and $\cos(4n-1)\theta+\sin(4n-1)\theta$ is divisible by $\cos\theta-\sin\theta$.

7. Prove that $\begin{vmatrix} 1 & 1 & 1 \\ \sin A & \sin B & \sin C \\ \cos A & \cos B & \cos C \end{vmatrix}$

$$\sin(A-B)+\sin(B-C)+\sin(C-A).$$

8. From a point P perpendiculars PL, PM, PN are drawn to the sides of a triangle ABC, prove that double the area of the triangle LMN

$$=(R^2-d^2)\sin A\sin B\sin C,$$

in which R is the radius of the circle circumscribing the triangle ABC and d the distance of its centre from P.

9. If perpendiculars be let fall from each angle of any triangle upon the interior and the exterior bisectors of the other angles respectively, the twelve points of intersection thus obtained lie four and four upon three straight lines.

10. The circle circumscribing the triangle formed by three tangents to a parabola, passes through the focus.

11. The locus of the centre of all rectangular hyperbolas circumscribing a given triangle, is the Nine-Point Circle.

12. If any system of forces Aa, Bb, Cc, &c., be in equilibrium, a, b, c, &c., being their points of application, the centre of gravity of a system of equal particles at a, b, c, &c., will coincide with the centre of gravity of a system of equal particles at A, B, C, &c.

13. Prove that the work required to drag a heavy body up a rough inclined plane exceeds the work required to lift the body through the vertical height, by the work required to drag the body along the base supposed equally rough.

14. Determine the condition of projection of a hoop in a vertical plane, so that when it reaches the ground it may roll backwards.

Education Department, Ontario.

JULY EXAMINATIONS, 1880

FIRST CLASS TEACHERS—GRADES A AND B.

ROMEO AND JULIET.

TIME—TWO HOURS AND A HALF.

Examiner—S. ARTHUR MARLING, M.A.

1. Trace the influence of the home-training of Juliet upon her character.

2. Compare Mercutio and Romeo, and comment on Hallam's remark—'Though we can by no means agree with Dryden, that if Shakespeare had not killed Mercutio, Mercutio would have killed him, there might have been some danger of his killing Romeo.'

3. Give an estimate of the part played by Friar Laurence in the play.

4. *Jul.* Hist! Romeo, hist! O, for a falconer's voice
To lure this tassel-gentle back again!
Bondage is hoarse, and may not speak aloud;
Else would I tear the cave where Echo lies,
And make her airy $\left\{\begin{array}{c}\text{voice}\\\text{tongue}\end{array}\right\}$ more hoarse than mine,
With repetition of my Romeo's name.

(a) *tassel-gentle.* Discuss the spelling, origin and meaning.

(b) $\left\{\begin{array}{c}\text{voice}\\\text{tongue}\end{array}\right\}$ which reading do you prefer, and why?

(c) *To lure.* Explain the origin of the 'to' in such phrases as this.

(d) *Tear the cave.* Give a parallel from Milton.

5. *Tyb.* What wouldst thou have with me?

Mer. Good king of cats, nothing but one of your nine lives, that I mean to make bold withal, and, as you shall use me hereafter, drybeat the rest of the eight. Will you pluck your sword out of his pilcher by the ears?

Explain "good king of cats", "dry-beat", "pilcher".

[OVER.

6. *Rom.* In faith, I will.—Let me peruse this face:
Mercutio's kinsman, noble County Paris!
What said my man, when my betossed soul
Did not attend him as we rode? I think
He told me Paris should have married Juliet,
To think it was so? or did I dream it so?
Or am I mad, hearing him talk of Juliet,
To think it was so?—O give me thy hand,
One writ with me in sour misfortune's book!
I'll bury thee in a triumphant grave;—
A grave? O, no, a lantern, slaughtered youth;
For here lies Juliet, and her beauty makes
This vault a feasting presence full of light.
Death, lie thou there, by a dead man interred.—
How oft, when men are at the point of death,
Have they been merry! which their keepers call
A lightening before death; O how may I
Call this a lightening?

(*a*) '*I will*', l. 1. Supply the ellipsis.

(*b*) Point out the rhetorical figures.

(*c*) Tell the origin and meaning of 'County', l. 2; 'lantern', l. 11; 'presence', l. 13.

(*d*) 'a dead man', l. 14; 'a lightening before death', l. 17. Explain and illustrate these expressions.

7. Describe the theatre of Shakespeare's time, with reference to (*a*) the stage and scenery, (*b*) the costumes, (*c*) the actors.

8. Refer to their context the following: 'how now, chop-logic?' 'I will give you the minstrel'. 'A la stoccata carries it away.' Explain the meaning.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADES A AND B.

ENGLISH LITERATURE.

MILTON, POPE, AND JOHNSON.

TIME—TWO HOURS AND A HALF.

Examiner—J. M. BUCHAN, M.A.

MILTON'S AREOPAGITICA.

1. Compare the prose styles of Milton, Pope, Johnson, and Matthew Arnold, pointing out in each what is characteristic of the age, and what of the man.

2. Sketch the history of the censorship of the press.

3. "That our hearts are now more capacious, our thoughts more erected to the search and expectation of greatest and exactest things, is the issue of your owne vertu propagated in us; ye cannot suppresse that, unlesse ye reinforce an abrogated and mercilesse law, that fathers may dispatch at will their own children. And who shall then stick closest to ye and excite others? Not he who takes up arms for cote and conduct and his four nobles of Danegelt. Although I dispraise not the defence of just immunities, yet love my peace better, if that were all. Give me the liberty to know, to utter, and to argue freely according to conscience, above all liberties."

—*Arber's Reprint, pp.* 72 *and* 73.

(i.) Write an explanatory note on the 'abrogated and mercilesse law.'

(ii.) *Cote and conduct and his four nobles of Danegelt.* Explain the reference, and write notes on 'cote', 'conduct', 'nobles', and 'Danegelt'.

(iii.) *Although I dispraise, etc.* Explain the meaning of this sentence.

(iv.) Give Johnson's views on the freedom of the press.

[OVER.

THE ESSAY ON MAN.

1. " But errs not nature from this gracious end,
From burning suns when livid deaths descend,
When earthquakes swallow, or when tempests sweep
Towns to one grave, whole nations to the deep ?
'No ('tis reply'd) the first almighty cause
Acts not by partial, but by general laws;
Th' exceptions few ; some change since all began :
And what created perfect ? '—Why then man ?
If the great end be human happiness,
Then nature deviates ; and can man do less ?
As much that end a constant course requires
Of show'rs and sun-shine, as of man's desires ;
As much eternal springs and cloudless skies,
As men forever temp'rate, calm, and wise.
If plagues or earthquakes break not Heaven's design,
Why then a Borgia, or a Catiline ?
Who knows but he whose hand the light'ning forms,
Who heaves old ocean, and who wings the storms,
Pours fierce ambition in a Cæsar's mind,
Or turns young Ammon loose to scourge mankind ?
From pride, from pride, our very reas'ning springs ;
Account for moral as for nat'ral things :
Why charge we heav'n in those, in these acquit ?
In both to reason right is to submit."
—*Part I., ll.* 141-164.

(i.) State the argument in your own words, and criticize it.

(ii.) What is meant by ' this gracious end', l. 141 ?

(iii.) Fully explain the meaning of ll. 147-150 inclusive.

(iv.) Write explanatory notes on the proper names.

(v.) What is the grammatical construction of ' account', l. 162 ?

2. " In his choice of the subject of the *Essay on Man*, Pope, we have said, was the man of his age. He was no less so in the form in which he endeavoured to elaborate his material, and in the fact that his interest lay in the elaboration, rather than in the matter treated."—*Mark Pattison.*

Explain and illustrate these statements.

3. Give an account of Warburton's connexion with Pope.

JOHNSON.

Reproduce Johnson's criticism of Paradise Lost.

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADES A AND B.

CHAUCER.

TIME—TWO HOURS AND A HALF.

Examiner—S. ARTHUR MARLING, M.A.

I.—PROLOGUE.

1. Describe the language of Chaucer with reference to *(a)* its vocabulary, *(b)* its inflexions. Give full examples.

2. Analyze and explain the forms *noones*, *atte*, *men*, *ironne*, *nadde*, *nyl*, *althur*, *everychon*.

3. Illustrate Chaucer's various uses of *as*, *for*, *but*, *but-for*, *but-if*.

4. Explain apparent anomalies in his versification.

5. Write the following lines in modern English:—

> An Haberdasshere and a Carpenter,
> A Webbe, a Deyere, and a Tapicer,
> And they were clothed alle in oo lyveré,
> Of a solempne and a gret fraternité.
> Ful fressh and newe here gere apiked was;
> Here knyfes were i-chaped nat with bras,
> But al with silver wrought ful clene and wel,
> Here gurdles and here pouches every del.
> Wel semede ech of hem a fair burgeys,
> To sitten in a *y*eldehalle on a deys.
> Everych for the wisdom that he can,
> Was schaply for to ben an alderman.
> For catel hadde they inough and rente,
> And eek here wyfes wolde it wel assente;
> And elles certeyn were thei to blame.
> It is ful fair to ben yclept *madame*,
> And gon to vigilies al byfore,
> And han a mantel riallyche i-bore.

[OVER.

(1) Derive *tapicer*, *burgeys*, *catel*, *rente*.

(2) Explain "to sitten," &c., "gon to vigilies," &c.

(3) Mark the scansion of the first ten lines.

6. Describe, after Chaucer, the "Frankeleyn", with all needful explanations.

7. Elucidate fully the following passages:—

(*a*) Full ofte time he had the bord bygonne
Aboven alle naciouns in Pruce.

(*b*) A yeman hadde he, and servauntz nomoo
At that tyme, for him luste ryde soo.

(*c*) Ther as this lord was keeper of the selle,
The reule of seynt Maure or of seint Beneyt,
Because that it was old and somdel streyt,
This ilke monk leet olde thinges pace
And held after the newe world the space.

Give different readings.

(*d*) So gret a purchasour was nowher noon.
Al was fee simple to him in effecte,
His purchasing mighte nought ben enfecte.

. . . . .

In termes had he caas and domes alle
That fro the tyme of Kyng William were falle.

(*e*) That presede wel, for overal ther he cam
At wrastlynge he wolde have alway the ram.

(*f*) And yit this maunciple sette here aller cappe.

(*g*) A peire of bedes gauded al with grene.

(*h*) Ther nas no dore that he nolde heve of harre.

(*i*) In daunger hadde he at his owne gise
The yonge gurles of the diocise
And knew here counseil, and was all here reed.

II.

THE NONNE PRESTES TALE.

1. Why woldestow suffre him on thy day to dye?
O Gaufred, dere mayster soverayn,
That, whan thy worthy king Richard was slayn
With schot, compleynedest his death so sore,
Why ne hadde I now thy sentence and thy lore,
The Friday for to chide, as deden ye?
(For on a Fryday sothly slayn was he.)

(a) What is the object of this passage?

(b) *Gaufred; Friday.* Explain the allusions.

(c) *Sentence.* What is the meaning?

2. Briefly annotate the following:—

(a) By nature knew he ech ascencioun
Of equinoxial in thilke toun.

(b) So Catoun, which that was so wis a man,
Sayde he nought thus, ne do no fors of dremes?

(c) Harrow! allas! her lith my felawe slayn!

(d) His novice him expounded every del
His swevene, and bad him for to kepe him wel
For traisoun.

(e) He knew by kynde, and by none other lore
That it was prime, and crew with blisful stevene.

3. Derive and give the meaning of 'assoiling', 'culpons, twynne', 'ye man'.

4. Give a list of the impersonal verbs you have met with in Chaucer.

5. How far may Chaucer be styled an original poet?

Education Department, Ontario.

JULY EXAMINATIONS, 1880.

FIRST CLASS TEACHERS—GRADES A AND B.

TRIGONOMETRY.

TIME—TWO HOURS AND A HALF.

Examiner—J. A. McLELLAN, LL.D.

1. If θ be the circular measure of an angle between 0° and 90°, then $\sin\theta > \theta - \frac{1}{4}\theta^3$.

Prove that $\sin 10'' = .000048481368....$

2. Find the sin of $(A+B)$ and the cos of $(A-B)$.

3. Prove that

(1) $\text{Cos}^2 A - \cos^2 3A = \sin 4A \sin 2A$.

(2) If $\dfrac{\cos(A+B) - \cos(B+C)}{\cos(A-B) - \cos(B-C)} = \dfrac{\cos(B+C) - \cos(C+A)}{\cos(B-C) - \cos(C-A)}$,

then $\dfrac{\tan B}{\tan\frac{1}{2}(C+A)} = \dfrac{\tan C}{\tan\frac{1}{2}(A+B)}$.

4. Given the sides of a triangle, determine the cosims of its angles.

If α, β, γ be the angles, taken in order, which the bisectors of the sides of a triangle drawn from the opposite angles make with the sides they bisect, then will

$$\cot\alpha + \cot\beta + \cot\gamma = 0.$$

5. Eliminate θ between the equations.

(1) $a = \text{cosec}\,\theta - \sin\theta$, $b = \sec\theta - \cos\theta$.

(2) $\left.\begin{array}{l}(a+b)\tan(\theta-\varphi) = (a-b)\tan(\theta+\varphi) \\ a\cos 2\varphi + \text{b}\cos 2\theta = C.\end{array}\right\}$

6. Investigate expressions for the radii of the escribed circles of a triangle.

If r be the radius of the inscribed circle, and r_1, r_2, r_3 the radii of the escribed circles, shew that $\dfrac{1}{r} = \dfrac{1}{r^1} + \dfrac{1}{r_2} + \dfrac{1}{r_3}$.

[OVER.

7. In the triangle ABC, if $BC = a$, $cA = b$, $AB = c$, prove that

(1) $\text{Cos}\,2A + \cos 2B + \cos 2C + 4 \cos A \cos B \cos C = 1$.

(2) $(b + c) \cos A + (c + a) \cos B + (a + b) \cos C = a + b + c$.

8. Two sides of a triangle are 85.63 feet, and 78.21 feet, and the angle they include is 48° 24′: find the remaining angles.

$\log 163.84 = 2.2144199$, $\log 7.42 = \cdot 8704039$.
$\log \cot 24° \, 12' = 10.3473497$, $\log \tan 5° \, 45'$
$= 9.0030066$, $\log \tan 5° \, 46' = 9.0042721$.

9. State Demoivre's Theorem.

Prove that the expression $(\cos\theta + \sqrt{-1} \sin\theta) (\cos\theta - \sqrt{-1} \sin\theta)^{\frac{p}{q}}$, has q different values and no more, p and q being integers prime to each other.

10. Apply Demoivre's Theorem to express $\sin n\theta$ and $\cos n\theta$ in terms of θ.

Deduce the series for $\sin \alpha$, and $\cos \alpha$ in terms of α.

Education Department, Ontario.

JULY, 1880.

PROFESSIONAL EXAMINATION—FIRST CLASS.

EDUCATIONAL METHODS AND SCHOOL LAW.

TIME—TWO HOURS.

Examiner—GEO. W. ROSS.

1. Prof. Bain says, "The three great functions of the intellect are discrimination, agreement and retentiveness." How would you teach an object lesson in order to secure the proper development of these three functions?

2. Give your notes and such blackboard illustrations as you would use in giving a lesson to an advanced class on the causes of the change of seasons.

3. Explain your method of teaching history, and illustrate the same by applying it to the reign of Henry VIII.

4. Should Grammar and Composition be taught simultaneously or separately? Give your reasons, and if separately, which first?

5. Give illustrations, from memory, of the difficulties with which pupils have to grapple, particularly in the First and Second Readers, and explain your mode of assisting them in the mastery of these difficulties.

6. What points are essential to the validity of an agreement between teacher and trustees?

7. The ratepayers of two adjoining townships wish to organize a union section. Describe the mode of proceeding from the first step to the erection of a school house, for which they had to borrow $2000 on their debentures, payable 10 years after date.

Education Department, Ontario.

JULY, 1880.

PROFESSIONAL EXAMINATION—FIRST CLASS.

PSYCHOLOGICAL FOUNDATIONS OF EDUCATION.

HISTORY OF EDUCATION.

TIME—TWO HOURS.

Examiner—GEORGE PAXTON YOUNG, M.A.

1. What are the principal circumstances leading to concentration in study?

2. Illustrate the influence of the social motives in education.

3. Assuming that the essential preparation for a general or abstract notion is the particular, describe as fully as you can the way in which a judicious teacher might proceed in carrying his pupils up from the particular to the abstract.

4. What was the object which the Jesuits proposed in their teaching? Illustrate the statement, that "their popularity was due to the means they employed as well as to the result obtained." —*(Quick).*

5. Give some account of Pestalozzianism.

Education Department, Ontario.

JULY EXAMINATIONS, 1880

FIRST CLASS TEACHERS.

DRAWING.

TIME—ONE HOUR AND A QUARTER.

Examiner—JAMES HUGHES.

Values.	
15	1. Draw from memory any object not found in your examination room.
20	2. Mark the construction lines necessary in sketching a street in a town, so as to show both sides of it in one picture.
15	3. Give an example of the balancing of compound curves.
25	4. Show by an illustration how to teach the fundamental principles of inventive drawing.
25	5. Draw a pattern for oilcloth or carpet.